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ABSTRACT

This dissertation studies the motives of community college faculty who decide not to use computers in teaching. For the purpose of the study, non-adoption of computers in teaching is defined as not using computers for more than word processing. In spite of the fact that many of the environmental blocks that inhibit the use of computers have been eliminated at many institutions, many faculty do not use computers. This investigation was conducted at Miami-Dade Community College (MDCC) through a series of in-depth phenomenological interviews. College-wide, MDCC has 47,464 students with a mean age of 27. There are 672 full-time faculty. During the 1997-98 academic year, MDCC offered college personnel 388 workshops, of which 72% offered training in technology while 28% were non-technology based. There were 3,656 participants, with 52% taking technology-based workshops, and 48% taking non-technology workshops. Overall, educators were not concerned that computers will replace them. They were, however, concerned that computers might negatively affect student-teacher relationships. Also, computer use required significant changes in values, beliefs, and consequent behaviors. The participants in the study were not willing to make these changes without evidence that the change was worth the sacrifice. Appended are a composite picture of adopter categories, a statement of faculty excellence at Miami-Dade Community College, an informed consent form, an interview guide, a sample page of transcription, and the author's vita. (Contains 84 references.) (NB)

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

THE CHOICE NOT TO USE COMPUTERS: A CASE STUDY OF COMMUNITY COLLEGE FACULTY WHO DO NOT USE COMPUTERS IN TEACHING

A dissertation submitted in partial fulfillment

of the requirements for the degree of

DOCTOR OF EDUCATION

in

HIGHER EDUCATION

by

Bradford R. Stocker

1999

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This dissertation written by Bradford R. Stocker, and entitled The Choice not to use Computers: A case study of community college faculty who do not use computers in teaching, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

Cheryl Benz

Miguel Angel A. Escotet

M.O. Thirunarayanan

Janice R. Sandiford, Major Professor

Date of Defense: October 22, 1999

The dissertation of Bradford R. Stocker is approved.

Dean Linda Blanton
College of Education

Dean Richard L. Campbell
Division of Graduate Studies

Florida International University, 1999

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DEDICATION

Change is one of the fundamental paradoxes of life. My friends, family, and other teachers are the real authors of this work for it has been their lessons, both direct and indirect, that have given me the strength, desire, ability, and knowledge to change my life and my behavior. Without them, I would have never been able to accomplish this work. It is they that have become a part of me, which have been guiding my mind, my spirit, and my thinking. I wanted to know about the nature of change and they have changed me. I dedicate this investigation to all my family, friends and teachers and to those who are seeking change -- there is hope.

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I wish to thank the members of my committee. Each one has given me particular and precise help at crucial moments. Dr. Janice Sandiford, who gave me respectful and firm guidance throughout my studies at F.I.U., has been especially helpful. We met just as she was taking over the program and we transitioned into it together. I feel very fortunate to have had such a wonderful doctoral experience, one very much different from the college campus legends of horror.

I would like to acknowledge all the librarians who have helped me but I cannot remember all of their names. I was a frequent visitor to Miami-Dade Community College, Kendall Campus library, where Vincent Patterson and Doug Lehman were most helpful in acquiring materials that some out of state libraries were reluctant to share. The University of Miami library was a haunt of mine and even though I entered on a SEFLIN card, most of librarians were very pleasant and helpful. Then there is Deborah Safford at the F.I.U. library. I pestered her so much for favors that she can now recognize my voice when I call her on the phone. I have always had a special feeling for libraries and librarians but this experience has indebted me to them forever.

I must acknowledge the support of my family and friends who kept urging me on even during the doldrums. My wife, Tere, put up with the peculiar moods that only writing can cause. Her love, faith, and belief in me have helped me more than I could ever fully acknowledge. My two step-sons, Rene and Rod, have contributed immensely in emotional as well as practical support. They assumed that I could do this thing and that was that. Moreover, Rod found a specific and essential article for me and several difficult to locate books at his library at the University of Florida. Rene was my transcribing buddy. Without his efficient, quick, and accurate transcribing of the interview tapes, I might still be listening to them and trying to get the words onto the just under 500 pages of transcription.

My friend, Rob Stevens, actually proofred this work from title to vita.

I must acknowledge my colleagues at the college, who graciously gave me their time, their ideas, and their feelings without which there would have been no data. I want to especially thank those who gave me extra time and feedback on the interview process.

Finally, I wish to acknowledge the following publishers for their permission to quote:

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ABSTRACT OF THE DISSERTATION

THE CHOICE NOT TO USE COMPUTERS: A CASE STUDY OF COMMUNITY COLLEGE FACULTY WHO DO NOT USE COMPUTERS IN TEACHING

by

Bradford R. Stocker

Florida International University, 1999

Miami, Florida

Professor Janice Sandiford, Major Professor

The primary purpose of this investigation is to study the motives of community college faculty who decide not to use computers in teaching. In spite of the fact that many of the environmental blocks that would otherwise inhibit the use of the computers have been eliminated at many institutions, many faculty do not use a computer beyond its word-processing function. For the purpose of the study non-adoption of computers in teaching is defined as not using computers for more than word-processing.

The issues in the literature focus on resistance and assume a pro-innovation and pro-adoption bias. Previous research on the questions is primarily surveys with narrowly focused assumptions. This qualitative research directly asks the participants about their feelings, beliefs, attitudes, experiences, and behaviors in regard to computers in teaching. Through the interview process a number of other correlated issues emerge.

The investigation was conducted at Miami-Dade Community College, a large urban multicampus institution, in Miami-Dade, Florida. It was conducted through a series of in-depth phenomenological interviews. There were nine interviews; eight within the profile; two were pilots; and one was an extreme opposite of the profile. Each participant was interviewed three times for about 45 minutes.

The results indicate that the computer conflicts with the participants' values in regard to their teaching and their beliefs in regard to the nature of knowledge, learning, and

the relationship that they wish to maintain with students. Computers require significant changes in the values, beliefs, and consequent behaviors. These are changes that the participants are not willing to make without overwhelming evidence that they are worth the sacrifice. For the participants, this worth is only definable as it positively improves learning. For even the experts the evidence is not there. Unlike the innovator, the high end computer user, these participants are not willing to adopt the computer on faith.

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Preface

I feel that it is necessary to say a few words at the outset about conventions used in this dissertation. If I wait until the procedures section to mention these details, you might have already built an opinion without my input. Therefore, I have chosen to say a bit about them here.

The researcher is not apart from the process of qualitative research, and this study is no exception. Because of the unique involvement of the researcher there is a subsequent shift in voice in the reporting. The use of the first person "I", and "we" where appropriate, is not only acceptable but preferable as this reinforces for the reader the role of the researcher in the relationship between the researcher and the study participants. I will address other aspects of qualitative research as it specifically relates to the study later.

I have used a particular notation for citations of the data. All of the data were transcribed, each interview was labeled, and each line numbered to facilitate easy referencing. Thus, a citation such as JA 2.3.8 431-433 refers to specific location in the data in the following way:

JA identifies the participant;

the two identifies the tape number;

the three identifies the interview number;

the eight identifies the transcription page number;

431 identifies the beginning line;

433 identifies the ending line.

This allows for easy access to the original transcribed data sources and if necessary, facilitates going back to the original tape.

Quotations of the participants have been edited to maintain original meaning and at times corrected for grammatical sense in its written form as suggested by Mishler (1998), Kvale (1996), and Seidman (1998). This allows for better readability while not changing

the context or meaning. There is an extended discussion of this in the methodology section of the study.

Please note that I will not have a separate literature review but will follow the form suggested by Merriam (1995) and Creswell (1994), as well as others. I have mixed the literature throughout the study.

Chapter I

Introduction

> There is a simple principle which is a bar against all information, which is proof against all arguments, and which cannot fail to keep a man in everlasting ignorance--that principle is contempt prior to investigation. (Herbert Spencer, in Alcoholics Anonymous, p. 570).

Change is natural and unavoidable. It is a fundamental component of life and learning. Yet change is met with a great deal of resistance and intentional change is often met with conscious, intentional resistance. The paradox of the natural propensity for change and the equally common propensity for maintaining the *status quo* demands investigation. When resistance to innovation, reform, and systematic changes are found in our educational institutions, the one institution whose proposed primary goal is learning, the resistance can be disconcerting. We would think that educational institutions, and all who work in them, particularly teachers, would be open to and promote change, yet they are often resistant. School boards administrators, teachers, staff, and the schools of education that train them are frequently resistant to major change. It also appears that the more profound the change that is, the more the resistance is increased. New innovations in education are often 30-40 years behind the research (Thorndike, cited in Snider, 1992). The well known pervasiveness of this resistance requires thorough explication if we are to understand it.

The nature of change is complex. It has individual, group, and environmental aspects (Mahoney, 1991). Each of these components must be understood in their unique character and as they interact and unite to influence decisions about change. Individuals may appear to resist alone but they also interact within groups in a manner which reinforces resistance to or acceptance of change. The environment, for purposes of this study, consists of the institutional culture and norms and also the greater societal culture and norms; all of these create vectors of influence on the education leaders, teachers, parents,

staff, and administrators. Therefore, it is important to see how these three factors, individuals, institutional culture, and societal norms, come together. If the resistance is not completely understood and accounted for, little change can be affected (Fishbein and Ajzen, 1975). Escotet (1983) reminds us that resistance to innovation is not merely a lack of knowledge on the part of the population but that by failing to take into account the beliefs and feelings of the people, we are reinforcing the very resistance that we want to reduce. By looking at the process of acceptance of innovation, and computers in particular, we can gain some insight into the nature of resistance.

In 1977, when Wozniak and Jobs developed the first Apple Computer, educational computing changed forever. The large ENIAC vacuum tube computers that universities were using to crunch large numbers became a thing of the past and the new personal, desktop computer quickly replaced workstations that had linked computer users to a mainframe. By the beginning of the 1980s, the personal computer was making inroads into every part of education. Software, hardware, and training for their use became prevalent. New post-graduate degrees were developed with a focus on educational technology, predominantly computers. Computer laboratories sprang up in schools or were added to libraries. Putting microcomputers into K-12 classrooms became a priority in the 1980s and into this decade. In the latter part of the 1990s, wiring the classrooms for Internet access has been the latest initiative.

In higher education, the computer has followed a similar path, the major differences are that rather than a microcomputer in every classroom, colleges and universities have computer laboratories associated with almost every department including the libraries. Many colleges and universities have made a personal computer a general requirement and computer literacy a standard competency for graduation. Many universities and colleges have put a microcomputer on the desk of every faculty and staff. The personal computer is

ubiquitous and physically permeates education at all levels. It has not, however, been wholeheartedly and completely adopted for instructional purposes.

The computer has been considered the most important technological advancement of the latter part of the century. The personal computer has been available for general educational use for over two decades. As an innovation in education it is still not fully integrated. On the one hand, new technology in education takes decades for adoption. "The average American school lags twenty-five years behind the best practice" (Mort, 1953 in Rogers, 1995, p. 64). Others have stated longer estimations. Edward Thorndike (cited in Snider, 1992), says that the usual lag is 30-40 years. By these estimates the computer in education might still be considered neophytic. On the other hand it has been around sufficiently to warrant investigation, particular into its non-adoption.

In spite of its public popularity, many higher education faculty have decided not to adopted computers for classroom support. Excluding those who teach in the fields of computer technology and business applications in which it is a requisite of the content, many faculty do not employ computers in the education process. Many of those who do use computers use them as replacements for typewriters and not for other direct or indirect educational support. It is precisely these educators who need to be understood yet who have been under-investigated.

Research of adoption of innovations has met with criticism that it is biased and that it fails to properly take into account those who do not adopt. There is evidence of pro-innovation bias, assuming that the adoption and use of an innovation is "beneficial for all potential adopters and that the objective of such research should be to increase the rate and extent of innovation diffusion" (Rogers, 1983, p. 22). Resistance to innovation would not only seem futile but also "a merely irrational reaction" (Herling, 1994, p. 4). This attitude is maintained in spite of the failure of many "good" innovations. Furthermore, pro-

innovation bias has tended to focus the blame on the individual (Rogers, 1995) and has avoided confronting serious research questions into the motivations of the rejecters.

All models of adoption have assumed that the final outcome ultimately should be adoption of the innovation. A major force in diffusion research, Everett Rogers (1962, and Shoemaker 1971, 1983, 1995), allows for a decision stage to include rejection and even later discontinuance; yet his final stage is "implementation," which gives his model a pro-innovation inclination. Rogers describes adopter categories and gives the non-adopter the unfortunate term "laggards." Sheth (1981) sees this choice of terms as, "a clear derogatory perspective toward them" (p. 274). Though other descriptors may on the face seem less pejorative, most researchers clearly assume the non-adopters to be a negative force.

Jagdish Sheth's (1981), "The Psychology of Innovation Resistance: The Less Developed Concept (LDC) in Diffusion Research," suggests a lack of research and elaborates on the pro-innovation bias; yet, he too fails to find an alternate, a less pejorative term to replace "resistance." Klien's use of "defender" (1996) for non-adopters is the kindest term encountered, and still Klien is pro-innovation. At the other end of the spectrum is "innovator" which has a positive connotation in most circumstances. The topology in current models and literature fails to adequately address the non-adopter. Rogers (1995) says that current research has an "individual-blame bias and 'late adopters' and 'laggards' are often most likely to be blamed for not adopting an innovation and/or for being much later in adopting than the other members of their system" (p. 117).

Hannafin and Savenye (1993) further suggest that resistance may be only indirectly related to the innovation. "Resistance to using computers for high-level student-centered activities may not be resistance to 'technology' at all. It may be an uneasiness with the change in the way knowledge and learning are defined when technology is in place. The operational definition becomes: there is no 'absolute' knowledge and there may be more than one correct answer" (p 29). Hannafin and Savenye's conclusions are that resistance is

directed more against a change in teacher roles, against a shift in theory about knowledge and learning, and a resistance to going against society's norms which accept the traditional views of teachers and knowledge than it is directed against technology itself. Hannafin and Savenye are moving our attention further away from the view that teachers who do not quickly adopt new technology are "laggards" as much of the literature calls them, (Herling, 1995).

The fact is that much of the literature views those who resist adoption of innovation and new technology as essentially wrong. Most literature sees non-adopters' reluctance as misguided and the literature expresses this view in some very negative terms. Those who do not immediately jump on the bandwagon of adoption are called lazy, fearful, pessimistic, nay-sayers. They are conservative, habituated to old ways, traditionalists, unmodern, not cosmopolitan, unsophisticated, Luddites. The list continues and while all, perhaps, have a grain of truth in certain contexts, their very negativism tends to work against comprehension of the underpinnings of the resistance and against an ultimate solution for what to do, if anything, about it. No one who has ever attempted to make significant broad change has not come across those who were obstinate resisters; however, when pejorative labels are used to categorize these people, we not only have failed in giving them their due respect as people, we have also set ourselves up for failure in implementing future change. Language that is negative hardens our view of resisters and diminishes sensitivities that are requisite for positive resolution. By not understanding, not accommodating to, and adjusting for the underlying motivations for resistance, we are hardening the very resistance we want to eliminate. This might be considered the very definition of counter-productive behavior.

Peter Marris in, *Loss and Change* (1974), notes that under normal circumstances Piaget's two basic principals of adaptation, assimilation and accommodation, are at work. "Normal events can be assimilated by the present structure which then

accommodates to features of the event for which its previous experience had not prepared it. But critical events cannot be assimilated at all, until the structure accommodates. This is much more difficult, because the less assimilable events are the harder to see what kind of accommodation would be successful.... The whole structure is threatened by radical confusion" (p. 133).

Marris sees resistance to change as natural and inevitable. He believes that humans have a conservative impulse (non-political in nature) that is at the heart of resistance. He says:

> 1. Survival depends on being able to predict events, with enough reliability to isolate failures of prediction and ultimately explain them. (Playing our chances can be enjoyable, of course, but only so long as the risks are calculable or trivial).
> 2. The probable consequences of events are only predictable if the events can be related to a context of learning which interprets them.
> 3. Since a social event is a relationship between oneself and others--a matter of action as much as a matter of fact--it can only be understood in terms of one's own purposes, sympathies and antipathies as well as learned experience of the regularities of human behavior.
> 4. The context of meaning evolves from earliest childhood, and becomes so structured and integrated that it cannot in time be radically changed without fear of psychological disintegration.
> 5. Our ability to handle the changing environment relies, therefore, upon conserving the fundamental structure of meaning each of us has grown up to.
> 6. The continuing viability of this structure of meaning, in the face of new kinds of experience, depends upon whether we can formulate its principles in terms abstract enough to play to any event we encounter; or, alternatively, on whether we can ignore or prevent experiences which could not be comprehended in terms of it (experiences, that is, where our expectations would be repeatedly and bewilderingly unfulfilled). The first is an extension of learning, the second a constriction of experience: both seek to make life continuously intelligible. In times of change, social scientists and fanatics alike come into their own (pp. 16-17).

If it is true, as Marris says, that at a very profound level we are reluctant to change because it threatens "psychological disintegration" and thus, it is a perceived question of personal identity and individual survival, then we must find ways that will facilitate the security of those whom we wish to change or no change is possible.

Marris asks himself if it is possible for his theory to explain real innovators and true geniuses who creatively attempt to change. He explains these deviants from the norm by suggesting that they compensate for their conservatism and their fears of psychological disintegration by trying to change the world rather than change themselves. Many see innovators as deviant and statistically, according to Rogers (1983), they represent only 2-3% of the population. The majority of people are slow to adopt or do not adopt at all. If in fact what Marris says is true that innovators avoid their fears by focusing outwardly on others, it would be a rather neat solution.

Marris believes that, on the whole, society is much more willing to accept incremental accommodations that do not demand a change in basic principles. In general, revolutionary change is abhorrent to us and thus unlikely to occur often. Rogers (1995) also says that if an innovation can be tried in portions, it is more likely to be adopted.

A significant ramification of Marris' ideas is the need to treat the conservative impulse of resistance with respect. He says:

> The articulation of this conflict [the psychological disintegration] is therefore as crucial to assimilating social changes as mourning is to bereavement. Even if it were possible to foresee how interests might be balanced with the utmost fairness, everyone has still to work out in his or her own terms what it means to their particular attachments, gradually reorienting their essential purposes. *No one can resolve the crisis of reintegration on behalf of another,* [emphasis added] any more than friends can tell the bereaved how to make the best of it. Every attempt to preempt conflict, argument, protest by rational planning can only be abortive: however reasonable the proposed changes, the process of implementing them must still allow the impulse of rejection to play itself out. When those who have power act as if they have only to explain, and, when their explanations are not at once accepted, shrug off opposition as ignorance or prejudice, they express a profound contempt for the meaning of lives other than their own. For the reformers have already assimilated these changes to their purposes, and worked out a reformulation which makes sense to them, perhaps through months or years of analysis and debate. If they deny others the chance to do the same, they treat them as puppets dangling by the threads of their own conceptions (p 155).

What frequently happens to innovative teachers, technology specialists, consultants, and other change agents is that they forget how they felt and what they did at the outset of their own conversion. Too often change agents act like reformed sinners, evangelists who have seen the light, received the word, and now want everyone to share their newfound salvation. In their missionary zeal, however well intentioned it may be, they step all over the sensibilities of those around them. Marris (1974), Escotet (1991), Fishbein and Ajzen (1975), say, such insensitivity will ultimately be counter-productive.

Marris lays a foundation for psychological reasons for why all humans react conservatively to change. On top of this foundation various motivations may be laid to form a wall of resistance. The fear of psychological disintegration that Marris sees may be manifested in what other researchers have noted. Rogers says that if no apparent advantage to the innovation is evident then people are reluctant to adapt (1983). Levine's needs for compatibility with past experiences and beliefs fits well on this foundation (1980). Confusion about the nature of the problem that the innovation is to resolve leads to uncertainty in action (cited in Terrell (1992) and others). Certain personality traits seem to imply openness to innovation. Tolerance for ambiguity, for example, helps in early acceptance of innovation (Bushnell and Rappaport (1971) as cited in Terrell (1995).

Individuals are interacting within their context as they construct their reality; they are never truly alone. Individuals are always enmeshed in a culture, interacting with others, and in various groups with which they identify. Organizations have an internal culture which may or may not be conducive to change. A very stable organization is less susceptible to change; whereas one with relatively high turn over is much more open to change (Levine, 1980). Leadership within an organization will respond to the internal norms and values of that institution. The decision making process that an organization utilizes has an effect. In an organization that uses consensus decision making, such as university faculties, a minority can block innovation. Even in an autocratic system, a small

group of hard-core resisters can disable the best innovation. Non-compliance and non-use has the same ultimate result as outright rejection.

Teachers in public institutions are functioning within two cultures (excluding familial and ethnic identifications) which greatly impose on their behavior. One is the culture of the school and school system in which they function. Another, equally significant, is the society at large that is most clearly and directly represented by the parents of the children in their classes. If innovation requires, as it has been suggested, a redesigning of the teacher's role and a change in the conceptualization of knowledge, then willing teachers may be caught between their desires to change and adopt new technologies and a school system that will not permit or support the radical change. In addition, the parents and students are participants in this same system, a system that has essentially not changed its perspectives of role of the teacher and the nature of knowledge for over a hundred years. The parents know how they, their parents, and even their grandparents were taught and their knowledge and experience determine their perceptions and judgments about education. Anything which deviates much from their entrenched investment in their school experiences will be heavily resisted. It is not only a threat to their identity as individuals but their relational identity as parents. How can they communicate with their children and with educational personnel about school if they are not knowledgeable about the system?

Students, particularly adult students, have similar influences on their opinions regarding their education. Even at the college level, students carry ideas of what good education entails and how it is reflected in the behavior of teachers. In urban institutions, many adult students are immigrants and have brought with them very strong traditional ideas of what teaching and learning is. These feelings, values, and beliefs are very difficult to overcome, even when there is a decided will to change and incorporate an innovation.

Some have claimed that because of their greater foresight and vision than resisters have, change agents, whoever they may be, should force change. Strong leadership, in this model, must require, even demand compliance and not wait for internal understanding and acceptance. In some situations and certainly for some very important issues, the case can be made for the top down enforcement of change. It is widely accepted that we would still be waiting for racial integration of schools to come from internal need recognition had Brown vs. the Board of Education not coerced a change in racial segregation in U.S. schools. However, when change of this nature occurs there is a risk of only temporary adoption or that the adoption persists only so long as vigilance of compliance exists. According to Herbert Kelman (1967):

> 1. When an individual adopts an induced response compliance, he tends to perform it only under conditions of surveillance by the influencing agent.
> 2. When an individual adopts an induced response through identification, he tends to perform it only under conditions of salience of his relationship to the agent.
> 3. When an individual adopts an induced response through internalization, he tends to perform it under conditions of relevance of the issue, regardless of surveillance or salience (p. 476).

This suggests that induced, forced compliance should only be used as a last resort, when other alternatives have failed or will not obviously work and the change is of great significance and assured benefit.

It may be that ultimately those who have seen the light that shows the need for massive, systemic reform will force the motivation and demand restructuring and then they might allow the process to evolve more humanistically and to sensitively implement the changes. At any rate, for now, we can see that change does not occur in a vacuum but rather is enclosed in and influenced by culture, norms, values, and beliefs built by many. "Some researchers believe that resistance to innovation may be a form of normal resistance to change in general" (Herling, 1994, p. 5). I suggest that more than "a normal resistance to change," it may be a completely rational and tenable decision to reject the innovation.

The lack of informed data about non-adopters and pro-innovation bias clearly indicates a need for investigation into the motives of non-adopters. The problem to be examined is the decision of certain faculty not to use computers in their teaching.

Purpose

> The problem is that the pro-innovation bias is limiting in an intellectual sense; we know too much about innovation successes, and not enough about innovation failures (Rogers, 1971, p. 94).

The primary purpose of this investigation is to study the motives of community college faculty who decide not to use computers in teaching. In spite of the fact that many of the environmental blocks that would otherwise inhibit the use of the computers have been eliminated at many institutions, many faculty do not use a computer beyond its word-processing function. For the purpose of the study non-adoption of computers in teaching is defined as not using computers for more than word-processing. For example, the creation of materials through a word processor that are then printed and copied for classroom use is not a use of computers in teaching. On the other hand, using a computer and a presentation program, such as PowerPoint, would be considered using computers in teaching. At Miami-Dade Community College, Kendall Campus, efforts to put "a computer on every desk" have been completed; so the financial costs for work related use have been eliminated. Faculty are allowed to take custody of the computer and move it to another place, including their homes; so location is not an inhibitor. There are numerous computer laboratories for computer support; some are exclusively for faculty and staff use. There are several electronic classrooms that are available for instructional purposes. Furthermore, there is adequate technical support through Computer Network Services and the Centers for Training and Development offer support for learning computer basics and specific education software. The social framework considered essential to successful adoption (Lewin, 1951, 1952) supports and advocates computer use. Still there are faculty who do not choose to apply computer technology in their venue.

The study seeks to answer the following research question: Why do certain faculty at Miami-Dade Community College choose not to adopt computers for teaching. "Simply to regard adoption of innovation as rational (defined as use of the most effective means to reach a given end) and to classify rejection as wrong or stupid is to fail to understand that innovation-decisions are idiosyncratic and particularistic" (Rogers, 1995, p. 111). In addition to the primary question, I consider the influences that impose on the decision to not adopt computers. There are a number of other questions that arise from the primary question. How do values and beliefs influence the decision? How does the society impose on the decision? What part does the institutional atmosphere play in the decision? How does self-image and other psychological factors shape the individual' s decision? How does the student influence the teachers' decisions? How do peers influence the decision? In what way does the innovation itself influence the decision? Are there better descriptors than currently used for non-adopters? Can other reasons for non-adoption be confirmed by existing literature? Are there new motives that emerge from the data? Through in-depth phenomenological interviews, I will explore the experiences and perceptions the participants have that relate to the primary and secondary questions.

Significance

> "... doing something is better than doing nothing, so long as one is realistic and honest in assessing and presenting the limitations of what is done." (Patton, 1982, p. 225).

This study is significant for a number of reasons. There has been much criticism of research in innovation diffusion that focuses on a bias towards innovation adoption. The criticism says that non-adopters have been insufficiently studied. The study attempts to fill that hole. Education has one of the slowest rates of adoption of innovation and the study will contribute to understanding why a significant section of education, community college faculty, do not adopt. The study attempts to remove the onus associated with non-adoption of computers and thereby allow for more accurate data about the behavior of non-adopters.

Furthermore, the study could contribute to more informed and better constructed future research designs, which can facilitate comprehension of non-adoption and, thus, improved data collection about resistance to change. Finally, better understanding of non-adopters would better inform change agents, technology trainers, and centers for staff and program development.

That being said, I wish to make it clear that I believe that the significance of any study is determined by the reader. The significance of qualitative research is not determined by numbers, "...there is no statistical test of significance to determine if results 'count'; in the end, what counts is a matter of judgment." (Eisner, 1998, p. 39). The study's significance is based on the credibility of the researcher and determined by the interpretation of the reader. Only others can truly ascertain if this study has any significance for them. In many ways it seems to me antithetical to qualitative design to make predictions about the ultimate significance and use of the results of a study. How can I argue for the importance of the individual and the power of perception in my rationale for in-depth phenomenological interviewing (see methodology and design sections) and then turn around and make grand assumptions about the potentials of my findings? Such assumptions diminish the role of the reader and other researchers. Just as the interview is a "co-production" of the interviewer and the participants (Mishler, 1986), so too the significance of the study is a joint venture of the researcher and the reader. I hope the reader will notice that I have chosen to use more conditional language. I have removed "will" from the verbs and replaced it with "may," "might," and "could." A more tentative attitude is appropriate for this research and conforms to my underlying philosophical beliefs. With this in mind, I would say that my generalizations, interpretations, suggestions, and conclusions attempt to add information to the general body of knowledge concerning the topic and themes of the study. "They are part of the substantive exchange between

professionals with their own expertise, not prescriptions from the doctor," (Eisner, 1998, p. 205).

Limitations and Delimitations

The study investigates only the faculty's decisions about adopting computers in teaching and not other educational technology as the computer is ubiquitous and demanding of change. The study explores the participants' resistance to change in regard to computers in teaching, not all change. The purpose of the study is to explore an area of research heretofore under-investigated; why some faculty choose not to use computers in teaching. Considerations of the literature are explored but primary consideration is given to emergent themes surrounding the question. The perceptions and decisions of the participants in regard to the primary and tertiary research questions are the paramount focus of this study.

The study is confined to purposefully selected faculty at Kendall Campus, Miami-Dade Community College, Miami-Dade, Florida, U.S.A. Only those who can self-identify as non-adopters per the definition in the study, not using the computer for more than word-processing, are interviewed. The data are collected primarily through in-depth phenomenological interviews, key informants, documents, and the researcher. There is no attempt to correlate observations of teachers' classroom ability with their own or others' perceptions. Previous research has been dominated by surveys that have hinted at underlying motives but have not satisfactorily answered the question. They have certainly not answered them in the ways that the phenomenological interview does.

The study does not purport to predict or generalize beyond the scope of the delimitations, which is consistent with qualitative research. However, there are researcher interpretations, conclusions, and recommendations. Furthermore, as previously stated, the qualitative research findings of the study are open to other interpretations. Further discussion of the strengths and weaknesses of the study can be found in the method section.

Chapter II

Theories and Concepts

Felson's Law
To steal from one person is plagiarism; to steal from many is research.

Dewey (1933) said, "When thinking is used as a means to some end, good, or value beyond itself, it is concrete; when it is employed simply as a means to more thinking, it is abstract. To a theorist an idea is adequate and self-contained just because it engages and rewards thought; to a medical practitioner, an engineer, an artist, a merchant, a politician, it is complete only when employed in the furthering of some interest in life -- health, wealth, beauty, goodness, success or what you will." (p. 223). With these words of the master educationist in mind, let us look at some more words of his and others who have lent their theories, concepts, and other ideas to me and this investigation.

The study of change involves many fields and crosses many disciplines. Each has something to contribute; each has a perspective; each has a peculiar motivation for studying change. The areas interested in change include business, education, anthropology, psychology, economics, social psychology, physics and other physical sciences, organizational studies, and more. Throughout the study there are citations from all these fields but the primary organizing frame is from Rogers' diffusion of innovation theories. Before looking at Rogers, it would serve well to look at the other theories and concepts integral to the study and recognize the major personalities involved with each. There are five essential people who represent the fundamental conceptual ideas in this study and influences on me as the researcher: John Dewey for knowledge and education; Adelbert Ames for the role of perception; Victor Frankl for the psychological importance of meaning; Kurt Lewin for the social dynamics of change; and Everett Rogers for the models of diffusion of innovations. Let me summarize each of the first four person's views and ideas in so much as they have contributed to the framework and backdrop of the study and then end with an extended look at Rogers.

Dewey

Research in education that is not touched by John Dewey is rare. His ideas have greatly shaped my educational philosophy and this research. Dewey is such a prevalent personage that I am hesitant to attempt to condense him to a few paragraphs yet Dewey best represents constructivist's views of education, knowledge and learning. So, instead of condensing his ideas, let's assume that most readers will know enough about Dewey and concentrate on how constructivism and progressivism impact educational computing. Dewey's notions of progressive education, when completely understood in his context, are truly innovative and suggest very different values and behaviors.

Application of Dewey's notions would require a shift in thinking and behavior. Application of his ideas to educational computing would take us beyond the six uses that Escotet (1991) outlines:

> 1. Computer-assisted learning (CAL), the concern is learning in the formative sense and requiring previous knowledge of a certain area or content or else instruction passed on by the computer.
> 2. Computer-assisted instruction (CAI) which includes new concepts or information, received by the students through a series of sequences which he uses to test itself.
> 3. Computer management instruction (CMI) which help teachers and managers to evaluate instruction materials by means of reports derived from the interaction between the student, the material and the equipment.
> 4. Computer simulated instruction (CSI), an experimental strategy in which the computer helps the student to pose and solve problems.
> 5. Computer-based instruction (CBI), in which the computer provides instruction and interactive simulation, helping the teaching and learning processes through modules, courses and areas of knowledge.
> 6. Intelligent computer-based instruction or learning (ICBI or ICBL), the latest and still experimental the development which would offer a full exposition of a subject, the rules of its interrelation and a generator of reasoning for the intelligent application of the data. (p. 20)

Dewey's application to educational computing in teaching would begin with a blend of CSI and ICBL. As the world of computing is so enchanted with cute terms and acronyms my inclination is to call the seventh use, in which the computer is a tool, computer as big shovel (CABS); however, a more serious use would see the computer as a partner or pal. In the computer as pal (CAP) model the computer is used in all its current

potential to solve problems from real-life situations, cross disciplines, and inter-disciplines. Both teachers and students determine the ways that the computer-partner will be used. In this model, the computer becomes a major, important gateway to data, to analysis of data, and to applications to real world situations. Students, teachers, and computers would interact to through a process syllabus, as defined in Markee (1997). In looking at the methods of the participants, Dewey's innovative, progressive ideas of education, help shape determinations about how traditional or progressive the participants are.

Dewey's ideas about the reflective nature of thinking impacted design of the study and the manner of analysis. "The distinction between process and product of reflective inquiry is thus not fixed and absolute. In calling the process 'psychological' and the product 'logical,' we do not mean that only the final outcome is logical or that the activity that goes in a series of steps in time and that involves personal desire and purpose is not logical. Rather, we must distinguish between the logical form, which applies to the product, and the logical method, which may and should belong to the process" (Dewey, 1993, p. 75). It has been important to build reflective thinking into the interview process and, also, the analysis process. Good analysis always involves reflective thinking and interpretations are impossible without it.

Psychologists

The psychological influences on the study come from the humanists, the Third Force psychologists, as it were. Freudians and neo- Freudians, along with SR (stimulus-response) group of behaviorists are not influential in this study. On the other hand the humanists, the Gestalt psychologists very much fit my Weltanshauung and this research. I have intended to achieve holism at all stages of this research. The humanists view change in context, against a physical and psychological background (a gestalt) and they do not focus narrowly on single behavior or a single event. There is no effort to separate persons from their social and physical environments but rather the effort is towards integration (in

therapy it is called reintegration). While there are numerous humanistic psychologists that have influenced me, Carl Rogers, Fritz Perls, Clark Moustakas, to name a few, those that most influenced the study have been Adelbert Ames and his work on perception, Victor Frankl and logotherapy's emphasis on meaning; and Kurt Lewin's all encompassing field theory.

Frankl's ideas about existential psychology focus on the person' s meaning. What persons make of events is more determinant of the behavior, well-being, and sense of self than anything else. Frankl survived the Holocaust and came to understand that while he could not control the horrid behavior of his captors, he could make meaning out of his suffering and life and choose how he would allow these horrendous experiences affect him. From that darkness his psychological theories came to light. He says, "I quite simply think, first of all, that conditioning processes are not the real causes of human behavior; secondly, that the real cause is something accessible, provided that the humanness of human behavior is not denied on a priori grounds; and, thirdly, that the humanness of human behavior cannot be revealed unless we recognize that the real 'cause' of a given individual's behavior is not a cause but, rather, a reason" (Frankl, 1978, p. 53). This being accepted as true, it is important to look at the meanings that the participants attribute to the events and decisions surrounding and involved in the research question.

Adelbert Ames is difficult to classify. He was a lawyer, artist, physicist, physiologist, psychologist and a Princeton professor. His work on visual perception has crossed many fields. Examples of his experiments can be found in most introductory psychology textbooks but few mention his name. He was a humble man. Issues of "perception" versus "reality", arise throughout the study. In qualitative research we are concerned with the believability of the participants and how well their perceptions coincide with reality. Perception impacts learning, change, knowledge, and relationships. Insight into the dynamics of perception and a relationship between the physical world and the

mental and emotional world cross all of the major assumptions of the study. Ames says, "The transaction between your body, your perception and your surroundings is an ongoing dynamic. The content of your perception may or may not correspond with its objective occasion and your anticipations may or may not correspond with the sequence of events. But whether they do or don't, they are consequences of an ongoing interaction of the three components of your total situation; and the interaction continues because you continue being a bundle of sequent needs craving satisfactions, of ends realizing themselves in means which embody them or fail to" (1968, p. 107).

The three principal psychological schools, Freudians, behaviorists, humanists, view resistance quite differently. The Freudians see resistance as a phenomenon that must be reduced as it inhibits the psychological well-being of the individual and interferes with the patient-psychologist relationship. The behaviorists focus on needs satisfaction and believe that when sufficient need arises resistance will be overcome. Humanists view change as satisfying aspects of the human that are not deterministic. Their focus is on values, beliefs, goals, and meanings. Interestingly, all three schools see change as internal and as involving a fundamental and profound change in the self, an essential change in the person.

"If one considers the findings of cultural anthropology and of experimental psychology, one can, I think, establish evidence that social influences enter every action of the individual, even actions which seemed to have nothing to do with society" (Lewin, 1951, p. 131). Lewin's force field theory lends a great deal to the understanding of the nature of change. Force field theory is an attempt at a unifying psychological theory that covers all levels of psychological concern, from personal well-being to international levels. "Bringing together the total field of psychology and doing that in a logically consistent manner might well be viewed as one of the basic purposes of our approach" (Lewin, 1951, p. 8). The term field is often interchanged with a more poetic one -- life space. Life space is

"... the person and the psychological environment as it exists for him" (Lewin, 1951, p. xi). Lewin links himself strongly to Gestalt psychology and as such his theory and his sub-theories find interdependence an important concept. Interdependence states that the elements of the person, other persons, and physical world dynamically influence each other. Lewin's most controversial notion is contemporaneity. Contemporaneity diminishes the importance of previous experience and life history, so fondly cherished by Freudians, in determining present behavior, feelings, and decisions. It is relevant to note that Lewin diminishes, not eliminates, past history. He admits it as a constituent of life space.

One point at which I diverge from Lewin's theoretical analysis is when he says, "Field theory is probably best characterized as a method: Namely, a method of analyzing causal relations and the building scientific constructs" (1951, p. 45). My attempt, here, is not to establish causal relationships. While causal relationships might be drawn by others, my design is to explore the connectedness of the phenomena. I am looking at relationships without making causal judgments. I am directing attention to valences of influences rather than causes.

One of the more elegant terms of Lewin's theory is "psychological ecology." He says:

> Within the realm of facts existing at a given time one can distinguish three areas in which changes are or might be of interest to psychology:
>
> 1. The "life space"; i.e., the person and a psychological environment as it exists for him. We usually have this field in mind if we refer to needs, motivation, mood, goals, anxiety, ideals.
> 2. A multitude of processes in the physical or social world, which do not affect the life space of the individual at a time.
> 3. A "boundary zone" of the life space: certain parts of the physical or social world do not affect the state of the life space at that time. The process of perception, for instance, is intimately linked with this boundary zone because what is perceived is partly determined by the physical "stimuli"; i.e., that part of the physical world which affects the sensory organs at that time. Another process located in the boundary zone is the "execution" of an action (Lewin, 1951, p. 57).

During this study, I have taken into account number one and number three; i.e., I have considered the life space and the boundary zones of the participants.

Lewin defines behavior simply as either directed action or emotional expression. He says that when considering actual change we must not focus on one property, "total circumstances have to be examined. For changing a social equilibrium, too, one has to consider the total social field: the groups and subgroups involved, and their relations, their value systems, etc." (1951, p. 224).

Another attractive aspect of force field theory is the attention given to groups and group influences on individual change. Lewin has evidence that individuals are more easily changed as a group than segregated and alone. Many teachers have seen how the internal dynamics of a group (their class) can go a long way toward creating a learning conducive atmosphere (learning being change) or conversely toward diminishing learning. I have had two sections of the same course, at the same hours, on alternate days and found one to be a highly functional, mature, cohesive group and the other to be a dysfunctional, immature, fractured group. The former group generally did better academically than the latter. The only significant differences are the internal dynamics of the two groups. For more information on this phenomenon, I suggest reading, *Group Processes in the Classroom*, (Schmuck and Schmuck, 1971).

Lewin says that, though social habits are usually seen as obstacles to change, they are more likely to be one vector, an inner resistance. "A second possible source of social habits is related to the value system, the ethos of a group" (1951, p. 225). As such, resistance to change depends on the values of the group and the value of the group to the individuals. Individuals do not move far from the values of the group that they hold in high esteem. Change can be fostered by a shift in values or a change in the perception of the value of the group. The more isolated the group is, the more it is a subculture, the more likely it is to be susceptible to change. This isolation can be intended in certain systems and when it occurs inside the institution it is called "enclaving" by Levine (1980).

Again, all of this goes towards reinforcing the notion of contextualizing the prosecution of the research. Lewin's ideas help focus the study on the need to look at the surroundings of the participants as a context of the decision to use or not use computers in teaching. Lewin's influence is in the analysis as well and particularly in the conclusions and interpretations. While writing is a linear endeavor, I have tried to be vigilant about maintaining the interconnectivity throughout all phases of the study.

Rogers

There are number of models of the innovation process, presented in Table 1, but I have found that none of the models are mentioned in the literature at anywhere near the frequency of Rogers'. They are presented here because anyone who seriously is going to discuss diffusion of innovations needs to account for Rogers' theories or be considered remiss. Rogers is more than one of the earliest researchers in the field and more than the most cited, he is the most comprehensive. Rogers' model is dynamic and broad. He addresses the nature of the adopters, in terms of the individual and the ecology, the characteristics of the innovation, channels of information, as well as the adoption process itself. The very thoroughness of Rogers' work makes it appealing and practical. In my literature search, Rogers was the first I read and even after reading countless others his model has been the most useful. It helped shape and inform every aspect of the study.

According to Rogers there are four elements in the diffusion process: (1) the innovation, (2) its communication, (3) the social system, and (4) time. Interestingly, Rogers defines innovation this way, "An innovation is an idea perceived as new by the individual. It really matters little, as far as human behavior is concerned, whether or not an idea is 'objectively' new as measured by the amount of time elapsed since its first use or discovery. It is the newness of the idea to the individual that determines his reaction to it" (Rogers, 1962, p. 13). In terms of this study, Rogers' definition is the most utilitarian. The

Table 1

Stages in the Innovation Process

Levine	Hage and Aiken	Rogers	Smelser	Mann and Neff	Havelock	Terrell
1. Recognition of need	1. Evaluation	1. Awareness	1 Dissatisfaction with sense of opportunity	1. State of organization before change	1. Awareness	1. Involvement
		2. Interest	2. Symptoms of disturbances	2. Recognition of need for change	2. Interest	1. Involvement
		3. Evaluation	3. Handling disturbances		3. Evaluation	2. Investment
2. Planning & formulating a solution			4. Channeling disturbances	3. Planning Change		
			5. Attempts to specify			
3. Initiation & implementation of plan	2. Initiation 3. Implementation	4. Trial	6. Implementation by entrepreneurs	4. Taking steps to make change	4. Trial	2. Investment
4. Institutionalization or termination	4. Routinization	5. Adoption	7. Routinization	5. Stabilizing Change	5. Adoption 6. Integration	3. Incorporation process returns to 1 and 2

Source: Adapted from Levine, 1980, p 7.

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microcomputer has been in education for two decades but its use in teaching can still be considered innovative by the participants in the study.

Diffusion is the process by which the innovation spreads. "The diffusion process is the spread of a new idea from its source of invention or creation to its ultimate users or adopters. The essence of the diffusion process is the human interaction in which one person communicates a new idea to another person" (Rogers, 1962, p. 13). Rogers' model looks at diffusion over a range of aspects and covers all types of innovations and technologies in their broadest sense. My study is not nearly as far reaching, as I am looking only at the singular aspect of non-adoption, resistance.

The social system, a population of individuals functionally different and engaged in collective problem solving behavior, can be relatively small, such as a village, neighborhood, or school, or as large as a nation-state. The social system, whatever it may be, is the context within which adopters make decisions and in which the process of diffusion of innovations occurs. The social system functions within its norms, the most frequently occurring pattern of behavior of the system's members. Rogers has idealized two types of norms for the purposes of discussion -- modern and traditional. He generalizes that "an individual's innovativeness varies directly with the norm of his social system on innovativeness" (1962, p. 75). Given this, it is curious that the context of this study is relatively modern, defined as cosmopolite, literate, rational, empathetic, and technologically developed, and that within this modern context the participants are choosing not to adopt the innovation.

Rogers' concept of learning is another point of divergence from my theoretical bases. Rogers is essentially a behaviorist: "Learning is defined by psychologists as the relatively enduring change in the response to stimulus" (1962, p. 77). As I said earlier, my beliefs about learning are decidedly not SR; nevertheless, this divergence is not sufficient for me to discard Rogers' model. On the contrary, his model continues to be practical in

most other areas. For example, we are back on the same track when he says, "the process of individual adoption of innovation is a type of learning." He continues to say that the adoption process is a type of decision-making. This "decision-making is the process by which an evaluation of the meaning and consequences of alternative lines of conduct is made" (1962, p. 78).

One of the most useful and most used concepts in the model is the stages of the adoption process. There are five stages: (1) awareness, (2) interest, (3) evaluation, (4) trial, and (5) adoption. The awareness stage is as it sounds, individuals know of an innovation but not about it. At the interest stage, individuals actively seek more information about the innovation. During the process of evaluation individuals *mentally* [emphasis added] apply the innovation to present and anticipated situations. If individuals feel that the innovation may be advantageous, they move to the trial stage during which the innovation is practically tested, usually on a small-scale, within the individuals' situations. At the adoption stage individuals completely implement the innovation or completely reject it. There are two significant variations within this stage of adoption. The first is discontinuance, in which there is initial adoption and a later rejection. The second is reinvention or adaptation of the invention, in which adopters make significant changes in the innovation so that it better fits their values or better suits their needs.

Rogers describes five characteristics of innovations: (1) relative advantage, (2) compatibility, (3) complexity, (4) divisibility, and (5) communicability. Relative advantage relates to the perceived superiority of the innovation over previous ideas, technologies, and behaviors. Compatibility considers how well adopters perceive innovation as relating to their experiences, values, and cultural norms. The perceived difficulty of learning, understanding, and implementing the innovation is its complexity. Divisibility is how well the innovation can be incrementally tested or implemented. Lewin (1951) does not agree that incremental attempts at adoption facilitate the ultimate adoption of innovation; he says

that piecemeal implementation is not as successful as wholesale adoption. Communicability is concerned with how well the ideas, results, and innovations can be diffused and passed on to others within the social system. Rogers discusses relative perceived profitability as another factor but as there was no financial impact on the participants for adoption, in that the institution provided necessary financial support. I would use "profitability" in terms of the required time investment in adoption of computers in teaching. Another characteristic Rogers considers is the interaction effect. This effect is similar to communicability but relates to the influence adopters have on non-adopters within the social system. Rogers, also, considers rates of adoption but as they are of little value to this more narrowly focused study, I have left out a discussion of this topic.

Rogers' model also delineates the characteristics of the adopter. There are five categories that range from one extreme to the other: (1) laggards, (2) late majority, (3) early majority, (4) early adopters, and (5) innovators. Innovators are not to be confused with inventors. Inventors create the innovation while innovators implement very quickly. The laggards are non-adopters or rejecters. It is worthy of note that Rogers considers both ends of the scale, innovators and laggards, "deviants," outside the norm. For a complete description of all the categories, I refer you to Table 8 in the appendices. What follows, in Table 2, is a modified version comparing the characteristics of only the two groups of interest in the study -- innovators and laggards.

Table 2

Picture of Innovators and Laggards

	Innovators	Laggards
Values	• venturesome; willing to accept risks • modern	• traditional • oriented to the past
Personal Characteristics	• youngest age • highest social class • wealthy • specialized interests • able to deal with abstracts	• oldest age • lowest social class • lowest income • generalized interests • more concrete
Communications	• impersonal sources • distant sources • cosmopolite • sources close to origin of innovation • scientific information sources • interaction with other innovators • seeks new information and ideas	• personal sources; neighbors, friends, and relatives with similar values • face-to-face • localite • sources close to home • holds on to old ideas
Social Relationships	• very cosmopolite • some opinion leadership	• very localite; • tend to be followers; semi-isolates
Roles influencing others	• active	• passive

Source: Adapted from Rogers, 1962, p. 185

Cosmopolite and localite are terms that Rogers uses quite often and, therefore, warrant explanation. Rogers says, "Cosmopoliteness is the degree to which an individual's orientation is external to a particular social system" (1962, p. 183). Cosmopolites tend to be concerned with world opinion. They are widely traveled and have contact with many cultures outside their local social system. In some cases, their social system may include a much larger geographic scope than their local community. Cosmopolites' values are more universally oriented. In a study of drug diffusion, innovativeness among doctors was related to whether the doctors were "patient-oriented" or "profession-oriented." Profession-oriented doctors' reference groups were local colleagues and the patient-oriented doctors were more concerned about the respect their patients had for them (Coleman and others, 1957 cited in Rogers, 1962). This is interesting and seems to parallel results in my study if we substitute teacher for doctor and students for patients. Cosmopolites would probably attend professional conferences out of the local area. The cosmopolites utilize distance sources of information and seek out new ideas from the sources. The cosmopolites are modern and more often liberal.

Localites are virtually the opposite of cosmopolites on every count. They are traditionally oriented and more conservative. Local resources, face-to-face, personal contact is more respected and more sought. Values are traditional and locally influenced and determined. The norms of the local social system are the most influential. Personal influence is more important to localites. This personal influence can be divided into three interesting psychological processes: (1) selective exposure which is a tendency to receive information that agrees with existing opinions; (2) selective perceptions in which the interpretation of the information is based on existing opinions; (3) selective retention is the tendency to remember that which agrees with existing ideas (Rogers, 1962).

So, as we can see, Rogers' diffusion of innovations theory and sub-concepts are powerful, clear, and encompassing of many different facets (Figure 1 best summarizes the

model). They have been useful, particularly in the analysis and interpretations in this study, and have been at work throughout the research process. Rogers conflicts with some other theories that inform the study, but not sufficiently to make his work untenable and impracticable. For this study, his ideas have served as both a filter and focus to view the research and as a backdrop against which to reflect insights. Some of my basic assumptions are different from Rogers' and some of my conclusions are divergent. Nevertheless, Rogers' theories have had a powerful influence on this research and on me.

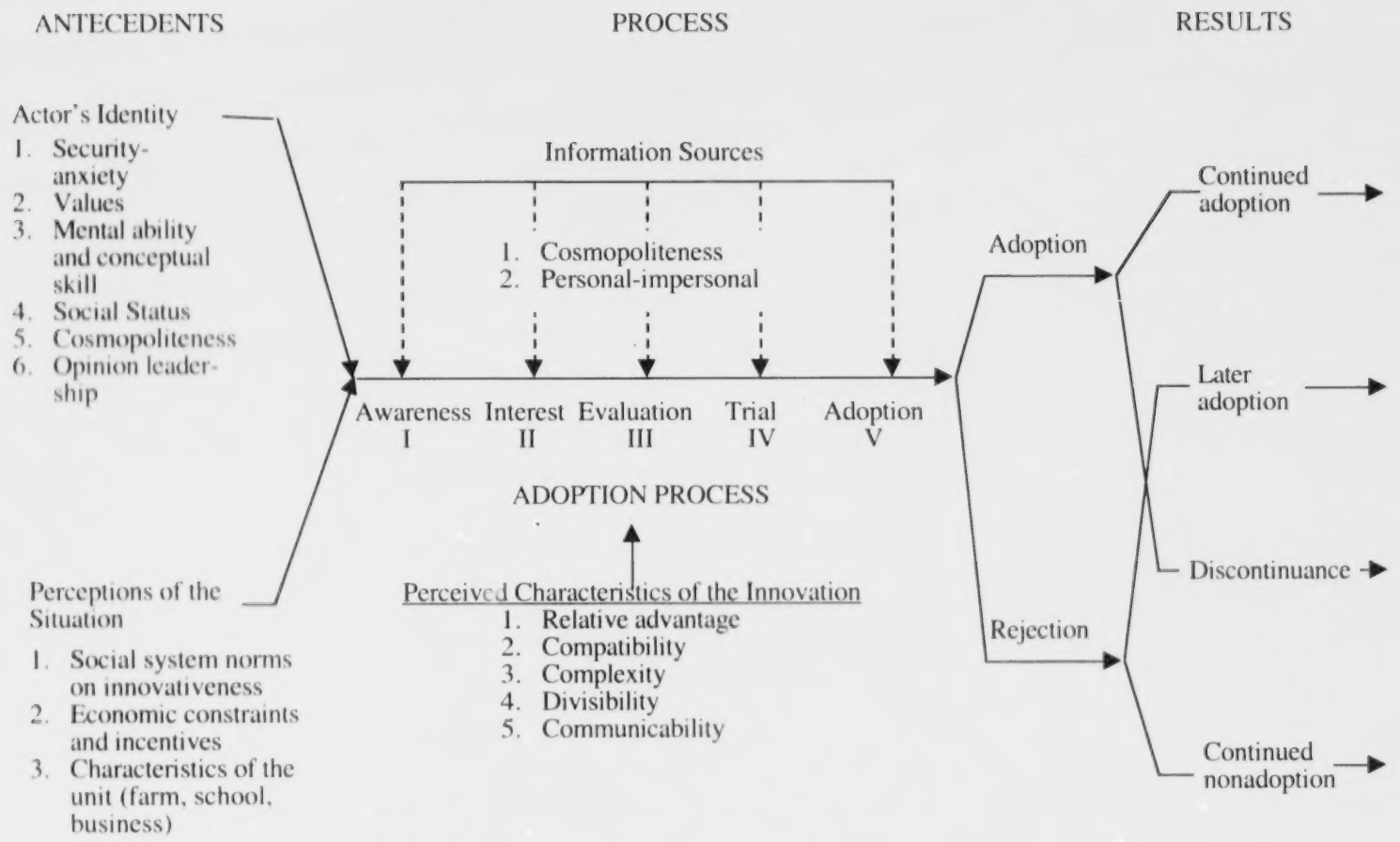

Figure 1. Paradigm of the Adoption of an Innovation by an Individual within a Social System

Source: Rogers, 1962, p. 306

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Chapter III

Design

> The content of perception is not self-explaining. To content you must add intent (Ames, 1968, p. 106).

The nature of the research question primarily determines the nature of a study but the nature of the researcher greatly influences the kinds of questions that are asked. I have actively sought to ask about a particular area of interest to me. I have developed a question that would lead me to do the type of research towards which I am predisposed. I have certain ideas about the world in which we live that directed me in this particular direction. Creswell (1994) suggests that the underlying assumptions of the qualitative researcher have major impact on the design of the study. This has been true in my case; so it logically leads me to clearly outline my assumptions in the major philosophical and methodological areas as well as inform you as to who I am as a researcher in so much as it is salient to the study.

Philosophical Assumptions

The first assumption I am making is that enough has been said about quantitative research. I do not mean this as a flippant remark, intended to brush off the arguments about the two different types of research. I am stating that this is a qualitative study and that there should not be a need to explain the qualitative aspects in terms of how alike or different the research is from a quantitative design. I have not seen one quantitative research that has found it necessary to even mention that qualitative research exists. There is one approach to this discussion, which compares quantitative and qualitative designs. I object to this approach, outside of research classes. The result too often is that the qualitative researcher assumes either a defensive or an offensive posture towards quantitative designs and neither is acceptable. In a defensive posture the researchers become embroiled in attempting to explain every aspect of qualitative research in quantitative terms or by redefining and shaping their meaning to fit qualitative ideas. This defensive posture appears to be apologizing for some sense of lack in the qualitative design; usually it is the lack of

numbers that is at the root. There is no need for apology. Qualitative research has a long, distinguished history in many fields. We need only to read Darwin's accounts to see that the roots of the physical sciences have had their qualitative researchers. The search for knowledge through human interaction and discourse goes back to Socrates. If dialog was good enough for Socrates, it should be good enough for the qualitative researcher.

The offensive approach is weak also; maybe the cliché, "the best defense is a good offense," is right for football but it is not very good logic. This approach attempts to bolster qualitative research by attacking quantitative research; for example, a qualitative researcher might say that quantitative research is less sensitive, less humane, and it turns humans into numbers. The logic and rightness of any position is not well proved by the destruction of another. If theories, ideas, and paradigms fall, let them do so of their own lack of support and if they stand, let them stand on their own merits.

Paradigms and methodologies are relative and dependent on the type of research question that is posed. The fact, as I see it, is that most of us, in our everyday lives, could still get along with an earth-centered universe. It would be problematic for explaining celestial movements and space travel but the vast majority of us do not look past the movement of the sun and the moon. As for me, I could live just as well believing, as I did when I was four years old, that those two huge heavenly bodies revolve around me; in fact, on some days, I would prefer to still think that way. The point is that there are many ways to find the little truths in life. Quantitative and qualitative research are but two of the dualistic divisions we have made to help us find the little truths. Each looks at the universe and its contents differently; each has its purpose; and each suits research questions and researchers distinctly. A qualitative design best suits my question and me, and I shall say how and why.

For those who care to compare, there is Table 3, from John Creswell, on the next page.

Table 3

Assumptions

Assumption	Question	Quantitative	Qualitative
Ontological Assumption	What is the nature of reality?	Reality is objective and singular and apart from the researcher.	Reality is subjective and multiple as seen by the participants.
Epistemological Assumption	What is the role of the researcher?	Researcher is independent and separate from the research.	Researcher interacts with what is being researched.
Axiological Assumption	What is the role of values and biases in research?	Research attempts to be value-free and unbiased.	Research is value-laden and acknowledges biases.
Rhetorical Assumption	What is the language of research?	Formal Based on set definitions Impersonal voice Use of specific and accepted quantitative terms	Informal Evolving decisions Personal voice Use of specific and accepted qualitative terms
Methodological Assumptions	What is the process of research?	Deductive reasoning Causal relationships Static design--categories are isolated before the study begins Context-free Generalizations lead to prediction, explanation, and understanding Accurate and reliable through validity and reliability	Inductive reasoning Interactive relationships Emerging design--categories identified during the research process Context-bound Patterns, theories developed of understanding Accurate and reliable through verification and credibility

SOURCE: Based on Firestone (1987); Guba & Lincoln (1988); and McCracken (1988) in Creswell (1994, p. 5)

Creswell (1994) suggests that researchers clearly set forth their assumptions in five areas: ontology, epistemology, axiology, rhetoric, and methodology. The researcher's assumptions within each of these areas lead to the researcher's paradigm for the study. The following are my assumptions in the suggested areas.

Ontological assumptions.

The literature search and the research question strongly suggest a qualitative phenomenological interview. This design has allowed for the infusion of the person into the diffusion discussion. We have opened the concepts of truth to include perceptions, feelings, beliefs, values, attitudes, and even tossed preferences into the mix. "The idea that truth exceeds belief is itself a belief in the possibility of an ontological objectivity" (Eisner, 1998, p. 51).

The ontological assumption asks, "What is the nature of being, reality, the stuff of life?" Though I believe things exist outside of my perception, I see reality as subjective and open to interpretations. I would say that the lone tree in the woods makes a sound whether I am there or not but the quality (pleasantness, wildness, softness, prettiness, loudness) of that sound is determined by me, a listener who hears it. I also believe that in many situations the perceptions of an event are more determinant of human behavior than external reality. The old saw, "seeing is believing," is not as true as my old friend Jerry's saying, "believing is seeing." This idea that beliefs have power over perception is more in line with the experiments of Ames in perception. He says,

> We are sure our surroundings are "objectively" not ourselves nor our images or ideas, that they are "other," but insofar as we identify this otherness, we do so as a function of its import for our humanity, and our human survival. So doing, our awareness of this functional relation diversifies, increases and multiples. In the process, the definition of existence goes on as a function of its value, and value signifies an enhancing process as well as a process of upkeep (Ames, 1968, p. 107).

Though little known, Ames has had great impact on psychology and education. He was long a correspondent with Dewey, who greatly admired his work. It was through

Dewey that I came to know of him and sought out his work. His insights have profoundly affected my ideas and assumptions for many years, which is why I quote him extensively. Ames says, "The transaction between your body, your perception and your surroundings is an ongoing dynamic. The content of your perception may or may not correspond with its objective occasion and your anticipations may or may not correspond with the sequence of events. But whether they do or don't, they are consequences of an ongoing interaction of the three components of your total situation; and the interaction continues because you continue being a bundle of sequent needs craving satisfactions, of ends realizing themselves in means which embody them or fail to" (1968, p. 107).

This is not one of Ames' experiments but is more easily conducted outside his special laboratory. It was told to me by two friends who are police officers. Two of them have been involved in the training of new police officers, cadets. One of them told me that witnesses when asked what kind of gun the assailant had more often say, "big and black." All of the details are lost in the fear and the experience of the perceiver, the victim. On the other hand, a trained and experienced officer will detail, precisely which type of gun, automatic or revolver, large or small caliber, and perhaps the make. So they use an old, simple exercise in their training to drive home to cadets the need for skillful observation that only comes through practice and experience. The exercise occurs while the cadets are working in class. A trainer dashes into the class, face covered with a mask, holding a weapon, and after grabbing a purse, runs out. The cadets have to recall and record everything they saw. When notes are compared there are invariably wide discrepancies in the accounts. While the exercise is for a practical, pragmatic lesson for police officers, it is an ontological demonstration. It illustrates the "Rashôman effect," so named after Akira Kirosawa's 1950 film in which a violent encounter is related through the eyes of four witnesses (Wolcott, 1994).

Epistemological assumptions.

The nature of knowledge is similar to the previous ontological issues. Knowledge is not separate from the knower. It is not something outside the person that has to be discovered but rather is constructed through persons' perceptions of and interactions with the world and others in it. There is an epistemological question, "What is the nature of the relationship of the researcher to that which is researched?" that I would answer, this way: My worldview, my training and experience, my psychological nature, and my familiarity with the problem influence that which is researched. (This answer is explored further in the section, Role of the Researcher). In the course of research, knowledge is being created through the interactions and relationships of the participant and the researcher.

Axiological assumptions.

The essential axiological question is, "What is the role of values in the research?" I assume that values are inherently a part of the researcher, the researched, and the study. The qualitative nature of the study not only allows for the values and biases of the researcher and the participants but also welcomes them. There is no attempt to screen them out or explain them away. Rather, there is an obligation to explain how all known values and biases affect the study. (This is examined more in another section). The fact that I value words, language, and dialog, greatly influenced my choice of qualitative research which is by nature descriptive and wordy. It moved me to select an interview design that relies on conversation, and speaking and listening carefully. It means that my data are primarily spoken and written language, rather than other abstractions and symbols.

Rhetorical assumptions.

There is a question about the language of the report of the study. I made a statement in the preface that is based on my assumptions in this regard. I assume that formal and informal language is appropriate at different times and for different motives. The presence of the researcher, my presence, sometimes should be felt and sometimes I should be less apparent. Qualitative rhetoric assumes rich, thick, meaty description. Vivid language,

powerful metaphors, humor and seriousness, anxiety and relief, and emotional words are always within the realm of the qualitative linguistic repertoire. Eisner (1998) likens qualitative language, at its driest, to that of a critic and, at its richest, to that of a poet. It appears that it greatly helps to be a decent writer. I hope I live up to the demands of the rhetorical assumptions.

The rhetorical assumptions also hark back to the beginning paragraphs about quantitative vs. qualitative research. I assume that qualitative work uses a different vocabulary than quantitative in all phases of the research. This means that rather than redefining terms, such as validity, that come from quantitative research, qualitative research cuts words, such as trustworthiness, from whole, new cloth. So not only tone, voice, and diction but also the lexicon referring to the research itself is assumed to be different.

Methodological assumptions

The prevailing logical process in qualitative research is inductive; we might say, making molehills out of mountains; i.e., reducing large amounts of data to useful information. It is pattern seeking by nature (Tesch, 1990). Categories come forth from the participants and from the researcher. While patterns are not necessarily identified prior to investigation, I assume that current thought, research, and even idle speculation may be taken into account during all phases of the research. Information that results from this process is "context-bound;" i.e., intricately involved in the setting, background, the gestalt of the information sources, which are predominantly the participants and the researcher.

The above assumptions build my worldview in regards to research. Creswell (1994), and others (Eisner, 1998; Goetz and LeCompte, 1984; Kvale, 1996; Merriam, 1988; Mishler, 1986; Seidman, 1998; Tesch, 1990), say that the researcher's training and experience, psychological attributes, as well as the nature of the question and the audience combine to determine the study paradigm. (I expand on the themes of training and experience in the section the Role of the Researcher). Psychological attributes generally

refer to my tolerance for ambiguity, comfort with a lack of specific rules and procedures for conducting research, support for the time necessary for such research, ability for reflection and self-analysis that are required by a qualitative design. I must say that the qualitative research process has not been without its low moments. I would direct you to Kvale's "Emotional Dynamics of an Interview Study" (1996, p. 85-86) for a very accurate description of the emotional phases of this kind of study. As much as I might have, at times, wished that I had embarked on a quantitative study and had been done much more quickly, or at times wished that I had gone to law school, I know that the nature of this qualitative study better fits the nature of my personality, mind, and beliefs about the essence of life. That correspondence between design and researcher is an essential element in qualitative research; that correspondence, I have.

Role of the Researcher

> The Necessity of Thought
>
> Once there was a scientist who was studying how far frogs could jump. He yelled at a frog, "jump!" And the frog jumped 10 feet.
> Then he cut off one leg of the frog. He yelled, "jump!" And the frog jumped five feet.
> Then he cut off a second leg. He yelled, "jump!" The frog jumped one foot.
> Then he cut off a third leg. He yelled, "jump!" The frog jumped 4 inches.
> Then he cut off the fourth leg. He yelled, "jump!" The frog did not move.
> The scientist concluded: When you cut off four legs of a frog, the frog becomes deaf! (Patton 1982 p. 275).

Merriam (1998) says, "The researcher is the primary instrument for data collection and analysis" (p. 14). This idea is so prevalent in the literature on qualitative research that a parenthetical citation would be ridiculously long. Qualitative research is concerned with process, meaning, and relationships. The researcher is not external to and hidden from the research process but is integral and evident. Quantitative research attempts to eliminate as much as possible the influences and impact of the researcher on the study, while qualitative inquiry welcomes the researcher as a necessary element. Rather than walk the thorny path of the relative values of quantitative and qualitative research, let's explore the role of the researcher in qualitative designs, particularly interviews, and then in that light look at what

I bring or fail to bring to the study. Goetz and LeCompte (1984) see "three general sets of role relationships held by the researcher that affect a study: (1) those that are external to the study and use the ethnographer's status as an investigator as reference point; (2) those internal to the study group that use the ethnographer's status as participant in the culture as reference point; and (3) those that develop in the interface between relationships that are internal and external. These are role relationships where boundary spanning is most frequently required" (p. 101).

In the first role, my relationships to the academy, my profession, my colleagues, and my field are stressed. I have obligations, which are defined, delimited, and constrained by these relationships. I have ethical concerns about how I analyze and report the data to these people. I have background, experiences, education, knowledge, and abilities, which when known to those within these relationships, make my results more credible. The second role is the relationship which connects or distances me from the participants in the study. "People cannot act toward others until their statuses, and behaviors attendant to the statuses have been made clear" (Goetz and LeCompte, 1984, p. 101). The third role, a blend of the first two, develops after the study is over. I may come to be seen as an "expert" on the subject and called upon to speak on the topic. This role remains to be seen. Much of the first role is discussed in the sections on methodology, design, and procedures. Careful descriptions, rationale, and ethics in these areas go a long way toward establishing me in that role. Who I am is important in the first role, but as it is also relevant for other aspects, its discussion is held until the end of the section. So, it is the second role, the nature of the relationship with the participants that becomes the focus for this discussion.

The role of an interviewer is a balancing act. My decision to interview is based on my beliefs about psychology, epistemology, ethics, research, and human relations. The process of interviewing is one that empowers the participants by giving them near equity in the study (Kvale, 1996; Mishler, 1986; Seidman, 1998). This empowerment does not

come without pitfalls, one of which is the possibility of losing sight of the research questions, the focus of the study. So, one aspect of the researcher's role is balancing between what they want me to hear and what I need to discover. There are many such issues that involve balancing conflicting vectors: being friendly, while not a friend; being subjective but not taken in; being close but not going native, as ethnologists say; being evaluative but not judgmental; being empathetic but not overwhelmed; being a good communicator while not dominating the dialog; recognizing biases and accounting for them; verifying and clarifying answers while not accusing; making the process beneficial to both the participant and researcher; and more. Kvale (1996) gives us the following list of "Qualification Criteria for the Interviewer" and explanations of each:

> 1. Knowledgeable: Has an extensive knowledge of the interview's theme, can conduct an informed conversation about the topic; being familiar with its main aspects the interviewer will know what issues are important to preserve, without attempting to shine with his or her extensive knowledge.
> 2. Structuring: Introduces a purpose for the interview, outlines the procedure in passing, and rounds off the interview by, for example, briefly telling what was learned in the course of the conversation in asking whether the interviewee has any questions concerning the situation.
> 3. Clear: Poses clear, simple, easy, and short questions; speaks distinctly and understandably, does not use academic language or professional jargon. The exception is in a stress interview: Then the questions can be complex and ambiguous, with the subject's answers revealing their reactions to stress.
> 4. Gentle: Allows subject to finish what they're saying, let's them proceed at their own rate of thinking and speaking. Is easy-going, tolerates pauses, indicates that it is acceptable to put forth unconventional and provocative opinions and to treat emotional issues.
> 5. Sensitive: Listens actively to the content of what is said, hears the many nuances of meaning in an answer, and seeks to get the nuances of meaning described more fully. The interviewer is empathetic, listens to the emotional message in what is said, not only hearing what is said but also how it is said, and notices as well what is not said. The interviewer feels when a topic is too emotional to pursue in the interview.
> 6. Open: Hears which aspects of the interview topic are important for the interviewee. Listens with an evenly hovering attention, is open to new aspects that can be introduced by the interviewee, and follows them up.
> 7. Steering: Knows what he or she wants to find out: is familiar with the purpose of the interview, what it is important to acquire knowledge about. The interviewer controls the course of the interview and is not afraid of interrupting digressions from the interviewee.
> 8. Critical: Does not take everything that is said at face value, but questions critically to test the reliability and validity of what the interviewees

tell. This critical checking can pertain to the observational evidence of the interviewee's statements as well as to their logical consistency.

9. Remembering: Retains what a subject has said during the interview, can recall earlier statements and ask to have them elaborated, and can relate what has been said during different parts of the interview to each other.

10. Interpreting: Manages throughout the interview to clarifying and extend the meanings of the interviewee's statements; provides interpretations of what is said, which may then be disconfirmed by the interviewee" (Kvale, 1996, p. 148-149).

Sensitivity is recurrent in the literature (Eisner, 1998; Goetz and LeCompte, 1984; Merriam, 1988; Mishler, 1986; Seidman, 1998) and involves not only the manner in which the interview is conducted, but in the way the data are viewed. Sensitivity requires seeing between the lines, carefully observing attendant behaviors, considering and integrating contexts, and interpreting accurately. It also means that I must contend with my biases, both positive and negative, even to the point of watching how much and when I nod, shake my head, and give other nonverbal cues while participants are responding. Bogdan and Biklen (1992) mention flexibility as another key quality. According to them, "To be flexible means to respond to the immediate situation, to the informant that is sitting before you, not to some predetermined set of procedures or stereotypes" (p. 99).

Seidman (1998) describes the relationship between the researcher and the participants in Martin Buber's terms, "I-Thou." Citing Schutz, he says, "Implicit in such an 'I-Thou' relationship is a shift from the interviewer's seeing the participant as an object or a type, which he or she would normally describe syntactically in the third person" (p. 80). Seidman also believes that rapport is essential but that the interviewer must be cautious about establishing too much rapport, which may change the relationship and corrupt the data. Merriam (1988) believes that a high tolerance for ambiguity is essential for all qualitative researchers. There are many more admirable and desirable qualities mentioned in the literature; it is, however, important to see that the themes inherent in all these are humanity and humanness. Interviewing is a human to human social relationship that has reasonable expectations of courtesy, caring, and correctness.

Two concerns in the interview design, linked to the ideas of empowerment, are reciprocity and equity. Interviewing not only attempts to empower the participants, by giving them greater control in the process, but also puts them in a more equitable position in the relationship. While much of the literature focuses on the obvious benefits to the researcher, who comes away with data that is, hopefully, useful for the study, there are benefits that the participants derive from well done interviewing. Seidman relates the case of a study of home day-care providers. These are people who work alone, at home, with a few children (usually less than eight depending on the state). They have little contact with other adults during their day and even rarer contact with others who are in the same business. For these people the process of telling their stories, of being truly heard, was almost cathartic. They felt a great sense of relief to be able to tell things that no one else wanted to hear or seemed to understand, not even their families. The very fact that someone showed interest in what they had to say was in and of itself a worthwhile experience. The very nature of actively, caringly, sensitively, with full attention, listening to someone is a gift that few do not appreciate. Good psychotherapists have long known this simple fact. Because Seidman found that there were many positive aspects of interviewing for the participant, I looked for similar responses and checked with the participants about their experience of the process. These are some of their responses, which range from the bland to the enthusiastic:

> JC What process? Oh, this process.
> B Yeah.
> JC Oh. This has been nice. This has been fine. Yeah, I think this is a good process (JC .3.3.8 , 243-245).

> R It's interesting. I've found it interesting. I was, you know, it's been awhile since anybody's asked me questions about my pedagogical philosophy, perceptions and ideas and that enriches my life (R 3.3.9, 305-307).

> JO It was fine. uh I like to talk so I don't mind talking, especially if I can say what I want to say (laughs). I enjoy it and so I think, I think stuff like that is good. I wish I had something like that yesterday. Wish we

had that yesterday [refers to faculty conference day] rather than confrontation. I wish we could just talk about it whatever it was. Because if you sit and talk about things, a lot of things you can change your mind about but not if it's a confrontation you can't. You don't do it that way.... I really hadn't thought of it [computers] the way you, the way we was talking about it. We don't talk about it that way. We are just following the tide (JO 3.3.11, 372-379).

L Very easy. Very smooth. It's been actually, I've found it very interesting. Especially the first one, when I went back and it was like a return to my
B Childhood?
L Childhood. It was almost pretty much, it was, I found it very interesting (L 3.3.13, 446-449).

D I'll say this. I think the process has been a very good one for me in terms of the experience and being able to process what you think about teaching and go back and reflect and I think the timing, was even though it was very chaotic, very stressful this week in terms of being finals week. Because of it being the last week and going into a new term and all of that it was very good in terms of having me reflect and think about what I want to do the next term. So it was very positive in that sense. So that part, yeah, beyond the chaotic coming here and (makes ahhhh sounds)
B Finding the chunk of time part
D right right right
B I know I truly, truly, truly appreciate that.
D So that, that probably, but it was good in a sense in that it really had me thinking about, even though I'd been thinking about it, and go a little bit deeper and say these are some things that I can do and reflect about how I might want to change and so I think that has been very, very positive for me
B Good
D and being able to really just sort of talk about it with someone. I think that's good. You know I think a lot of times we don't talk about what we do or how we do it. uhm We just do it. But I think by talking about it and sharing it with someone and us kind of relating and talking, I think that's important, that's very, very important (D 3.3.13, 448-466).

Notice the recurrent themes in their responses. I believe they speak to the beneficial aspects of the process for the participants. I should mention that the in-depth interview process, while demanding and at times exhausting, it is a uniquely enriching experience. For the time that the interviews are conducted, the participants have allowed me to share insights, thoughts, ideas, and feelings that they have shared with few others and in some cases no one else. It is a rare privilege.

Ethics

> An interview is a moral enterprise: The personal interaction in the interview affects the interviewee, and the knowledge produced by the interview affects our understanding of the human situation (Kvale, 1996, p. 106).

There are a number of ethical questions that are not addressed in the other sections that warrant discussion here. The rapport that is built from the interview process creates trust and confidence in the interviewer. Often information that is not pertinent to the study and that is personal may come up because of the rapport and trust. It is incumbent upon us to not pursue such topics. The relationship is similar to a student-teacher relationship and we must not take advantage of our delicate position. The relationship, while perhaps, inadvertently so, is not therapeutic, unless within such a context. We must be cautious about attempting to "help," "cure," or "change," the participant.

If we have chosen anonymous reporting then we must maintain confidentiality. It is permissible for the participants to reveal their involvement in the study but it is not permissible for us. We should be cautious about sharing anecdotal information with others outside of the study as this might inadvertently give away the person's identity. We should be clear about how and why we chose the participants and we should share that information with them at the beginning. I have been very cautious about maintaining the participants' anonymity. In addition to the written consent form (see appendices), I took time to make sure it was read and understood as well as signed. I decided not to allow for member-check editing, and would not have given transcripts to the participants; however, I did offer copies of the audiotapes of the interviews. My reasons for this are explained in more detail in the procedure section; here, it is relevant that I have been open about the process and willing to share that the with the participants. I refrain from characterizations of the individuals. Their words generally stand for themselves and I have not made inferences which go beyond reasonable interpretation; that is, one or two steps.

The term "boundary spanning" is "skill in communicating within and across cultural groups," (Goetz and LeCompte, 1984, p. 99). While this may seem to be more relevant to ethnographers in foreign cultures, it has bearing on interviewer's within seemingly similar cultures. Seidman (1998) writes about social group identities and their impact on the interviewing relationship. He looks at: race and ethnicity; gender; class, hierarchy, status; linguistic differences; age; and elites. These are factors that each participant in the process, the interviewer and interviewee, bring with them and cannot be controlled. While we can lie about our age, major differences are as apparent as race and gender; no one is going to believe that I am 20, anymore than they would believe I am a black female.

Our awareness and sensitivity to these threats to the relationship can go a long way towards spanning the boundaries. Seidman, further, believes that the three interview structure can mitigate tensions that might arise from cross-race, cross-culture interviewing relationships. The process of repeated contact over a period of time works to relax the interview environment (Seidman, 1998). As with many other things he says, I found this to be true. There was a progressively more relaxed change at the end of the interview than at the beginning and an even more pronounced difference among the first, second, and third interviews.

Issues of age, class, and status did not affect many of the relationships, as there was relatively little difference in these characteristics among the participants and me. However, race, ethnicity, and language were different. I believe that I was successful in overcoming most of the potential problems that might have arisen from racial and ethnic differences. My activism in racial issues, and my counseling background helped establish rapport and credibility with an Afro-American participant. My familiarity with Judaism and Latin American cultures helped me significantly with other participants. I must confess however that I was less successful with a participant whose background was from rural, poor, white, southern America, which I will discuss later.

The role of the researcher has had many different descriptions: reporter (Mishler, 1986), craftsman (Kvale, 1996), critic and connoisseur (Eisner, 1998), interviewer (Seidman, 1998) and while each of these terms reflects the writers' particular paradigms, they all represent criteria that are very much the same. Researchers must have knowledge of the field and the subject of the study. They should have interview abilities, attitudes of openness and flexibility, a critical eye, tolerance for ambiguity, cultural sensitivity, boundary spanning capability, and commitment to the principles and beliefs inherent in phenomenological interviewing. Much of this is elaborated upon in other sections; therefore, what remains is an assessment of my attributes, background, and capabilities in light of the foregoing discussion. What follows is a self-assessment of interviewer qualifications. In this evaluation, I am particularly looking for that which enhances or diminishes my credibility as a researcher and interviewer.

Who I am

> Limitations deriving from researcher characteristics and personal predilections are unavoidable at times: age, sex, and ethnicity are factors most commonly restricting access to data. These biases must be addressed and discussed clearly and openly for the study to be credible. Similarly, physical, social, moral, and emotional dimensions of researcher background affect choice of participation, obstructing involvement even in activities essential to understanding components of the culture or group under study. Investigator should identify these factors and explained how they affect the credibility, comprehensiveness, and comparability of the research results (Goetz and LeCompte, 1984, p. 238-9).

I was an undergraduate during the 1960s. I was much influenced by the social changes of the time. I felt that the title of the book, *Teaching As a Subversive Activity*, best explained why I wanted to be a teacher. So, after majoring in English and political science, I began to study professional courses in education. During that time, the school of education at the University of Miami was very traditional and I was a burgeoning radical. While they were going on about Skinner and behavioral objectives, I was reading Dewey and progressive education literature. When they wanted me to read and write on Bloom's

taxonomy and the benefits of standardized testing, I read and extolled Goodman, Holt, Moustakas, Rogers, and Freire. When they attempted to put me in a public middle school as an aide, I argued to be a teacher of high school dropouts in a GED program. Needless to say we had a parting of the ways before I was certified.

After a year of teaching in a private tutorial high school that catered to dropouts, it became apparent to me that the problems in education started much earlier than high school. I decided I needed to pursue alternative education venues. I ended up in a graduate program at the University of Massachusetts in 1970. It was the height of the humanistic education movement, and the University of Massachusetts, under the direction of Dean Dwight Allen, was receiving large federal grants and using them to push the envelope in educational ideas. While studying for my master's degree in education, I worked in various preschool settings. I ran a parent cooperative pre-school, where I developed materials, curriculum, and structured the school to be specifically suitable for an open classroom curriculum and methodology. I designed indoor and outdoor educational toys and equipment, which I built or had constructed and used them in my school. I became involved in teacher training, developing courses and methodology and curriculum, and the supervision of student teachers and parent aides in their teaching experiences. For a couple of years, I worked in Smith College's Laboratory School. I have had many opportunities to learn a great deal about observing subtle human behavior. Humanistic education values the affective domain and believes that emotional development is as important as cognitive development. The ideas associated with humanistic education greatly influenced my educational philosophy, my teaching, and the conduct of my inquiry. I was concerned throughout the research with both the cognitive and the affective aspects of the question and the manner of researching it.

I have studied much about psychology both in and out of school. I became involved in Re-evaluation Counseling, and Parent Effectiveness Training (P.E.T.), both of which

involve the training of skills of active listening, and the observation of nonverbal communication. These skills have served me well during the interviews in the study.

I have reasonably strong analytical skills. These began to develop with lessons I learned from my father. During World War II, he was in the service. It was during World War II that educational technology came of age and the concept of "task analysis" came into being (Anglin, 1991). My father taught me the ability to look at a task or problem and break it into logical, sequential increments that are more easily accomplished. He began my lessons on problems solving, teaching me to look at all the angles and seek a variety of solutions. These lessons I further refined through studying Edward de Bono's "lateral thinking."

My work in English and in English as a Second Language has taught me a great deal about analyzing the nuances of language and meaning. My work in ESL also started me on a journey into other cultures and I began to study other languages. My family and I are bilingual and bicultural. I have lived in Spain and Nicaragua and I have studied in four foreign countries. I have traveled in about 24 other countries and seen about four-fifths of the United States. Among others, I studied Hall's work on nonverbal communication and cross-cultural exchanges. I studied diversity and in the early 1980s brought racial sensitivity trainers, from the University of Massachusetts, to Miami-Dade Community College for an encounter group workshop on race relations. I have been active in "liberal causes" involving race, immigration, peace and other social causes. At times, I have been known to demonstrate in the streets.

I consider myself a feminist and I believe I am sensitive to issues of gender and sexism. I worked for a number of years in early childhood education, and for a short time studied pre-nursing; both careers have been considered by society to be "female careers." This bias was so profound, at the time I studied them, that textbooks written for their courses used the subject pronoun, "she," when replacing a non-gender specific subject; this

is contrary to the traditional grammatical rule. You might notice that I have chosen to avoid this problem by using plural forms.

I believe that my experiences, training, and educational background have facilitated my ability as an interviewer. I believe I was able to construct good, open-ended questions; that I was flexible; that I pursued ideas that came up during the interviews; that I was able to span boundaries; and that I utilized feedback. I believe I was sensitive to people's concerns and that my interviewing skills facilitated the participants' ability to open up to me and that they consequently found the interview experience pleasurable, if not beneficial.

On the other hand, I have some biases and characteristics, which I need to own. My educational philosophy is strongly influenced by Dewey and I am non-traditional in many aspects of my teaching and life. I am a constructivist, a humanist, a feminist, and a progressive. I am sometimes intolerant of people who hold dissimilar views. It is difficult for me sometimes to listen to people who expound traditionalist ideas and even more difficult for me to hear racist, sexist, anti-Semitic, homophobic or other prejudicial remarks against groups of people. I am sensitive to bias against elders. Thankfully, none of the participants made such comments.

I believe it is important to grow professionally, to change, and to continue to learn. Initially, I wanted to know why people resist change. I believed that change was essential and necessary and that resistance was not positive. Through my research I have been forced to reconsider my position on change in general and about computers in education specifically.

According to Rogers, I would be considered an early adopter of computer technology and not an innovator. I have been involved in computer technology in education since 1981. I bought my first personal computer in 1982. I was involved in setting up the CAI laboratory for developmental mathematics and English, and ESL at the Inter-American Campus. I have worked in three alternative programs in Miami-Dade Community College

and I have developed and taught courses, in computer technology, education, ESL, and distance education. I have taught many pre-service and in-service teachers, at Miami-Dade Community College, the University of Massachusetts, and Barry University. I facilitated the development of a program between Barry University and Miami-Dade Community College that allowed for Miami-Dade Community College faculty and other personnel to take up to 15 credits in Barry's computer technology program. I completed an Education Specialist Degree in Educational Technology at Barry University that started through the MDCC-Barry joint venture. I have a broad background in the areas this study touches.

It might seem that I would necessarily be very much pro-computer. The contrary is true. I have considerable doubts about the efficacy of computers in education, particularly in the ways that they are being used now. As the study progressed, my biases changed and I became much more open to the validity and rationality of the participants' decisions in regard to computers. In fact, I had to be careful not to allow my bias to swing in the other direction.

Finally, the problem I had with JO, one of the participants, is also evidence of a bias I have in regard to certain linguistic groups. This individual's use of idioms, speech forms, and his accent were, at times, very difficult for me to comprehend. There were moments during the interview that I had to ask him for clarification of words and phrases and to repeat certain expressions. His tapes were very difficult to transcribe and took four to five times longer than the others. I developed some strong resentments and frustration because of the difficulty in communication. Additionally, he was confusing about whether he fit the study profile and I had the added sensation that all the additional work he required would be for naught. He was the only individual with whom I had a follow-up after the third interview, in order to clarify his fit.

Through my journal, I became aware of my feelings toward this participant. Once I realized and accepted my responsibility for the costs in time and energy and the difficulty in

communication, I was able to reassess his responses more clearly and fairly. Certainly, those from his region, his family, and his friends easily understand him. My difficulty was not due to his inability to communicate but due to my lack of familiarity with his speech forms. The confusion about his fit in the study profile was at least in part due to my reluctance to push harder for clarification early in the relationship. Once I had discovered my prejudice and I was able to take positive action. With the follow-up interview I came to see him and his response in a new, clearer and more productive light.

The humanistic nature of qualitative research means that we are never completely free of our biases; therefore, the task is not to eliminate them but to limit them. Is important as a qualitative researcher that we recognize our characteristics and background for their positive and negative influences on the study. Goetz and LeCompte say that qualitative research, "is one of the few modes of scientific study that admit the subjective perception and biases of both participants and researcher into the research frame" (1984, p. 95). Most of the literature supports the belief that the researcher's background and experience is useful for clarifying and comparing was observed. I concur.

Setting

> In a specific place, amid specific surroundings, at a specific time, you stand as a unique individual, looking (Ames, 1968, p 107).

Miami-Dade Community College is one of 28 colleges in the Florida System of Community Colleges. Originally called Dade County Junior College, the College went through several name changes arriving at its current name in 1973. It initially was part of the County public school system but in 1968 the Florida Legislature created independent, separate legal entities for the operation of community junior colleges. Miami-Dade's advisory committee is now the District Board of Trustees, which is appointed by the state governor. In 1960, Miami-Dade Community College opened one campus; now, there are six separate campuses and seven outreach centers (MDCC Catalog, 1998).

Miami-Dade Community College is located in Southeast Florida, in Miami-Dade County. Miami-Dade County has approximately 2,090,314 people (University of Florida projections based on the 1990 U.S. Census). Approximately 49% are Hispanic; 20% are Black; 30% are Non-Hispanic White, and there is about 1% others. The county is multicultural and multilinguistic. The influences of Spanish are very evident and there is a new growing dialect called Spanglish. The county was the first in the country to have bilingual education in elementary schools. The College reflects the ethnic diversity and the needs of the county it serves.

Not unlike many other community colleges, Miami-Dade Community College has an open door admissions policy. Students who have graduated from accredited high schools in United States or hold high school equivalent (GED) diplomas, transfer students from colleges and universities, foreign students with education equivalent to U.S. secondary school education and meet the language requirements may be admitted to credit programs. Persons 18 years and over, who would have graduated from high school prior to 1983, may be admitted for occupational programs. A few special programs may have additional requirements (MDCC Catalog, 1998).

College-wide there are 47,464 students, 14,740 are full-time and 32,724 are part-time. Their mean age it is 26.94; 59.2% are female and 40.8% are male. The students' native languages are English (44.9%), French/Creole (6.2%), and Other (3.0%). The ethnicity of the students is Spanish (45.9%), White Non-Hispanic (13.6%), Black Non-Hispanic (21.2%), Hispanic (63.1%), Other (2.0%). The majority of the students (65.1%) are seeking an Associate in Arts degree; approximately 26.1% of the students are seeking an Associate in Science degree; and the rest (8.7%) are non-degree seeking. According to the most recent research, there are 672 full-time faculty, 51.5% are male and 48.5% are female. Ethnically there are White Non-Hispanic (60.7%), 154 Hispanics (22.9%), 97 Afro-American (14.4%), 408 and 13 Other (1.9%) (MDCC Facts in Brief, 1998).

Kendall Campus, the second campus, opened in January 1967. The campus is located in a suburban area of the county, on 185 acres. While not the largest physically, this campus has the most students and the most faculty of the six campuses. The latest figures show that 59.9% of the students are female and 44.1% are male. According to Miami-Dade Community College Institutional Research, the majority of the students are Hispanic (72.2%); the rest are White Non-Hispanic (16.3%), Black Non-Hispanic (8.8%), and Other (2.7%).

At Kendall, there are 282 full-time faculty of whom 169 (59.9%) are male and 113 (40.0%) are female. Ethnically, the faculty is distributed as follows: 191 (67.7%) White, 58 (20.5%) Hispanic, 27 (9.5%) Black, 5 (1.7%) Asian /Pacific Islander. Thirteen faculty members are disabled, including six physical, one visual, one hearing, and five are not disabled to the extent that requires institutional assistance. (Human Resources Department, Faculty Profile Database, 1998). Kendall campus has over 650 active adjunct instructors teaching credit and non-credit classes. Institutional Research at Miami-Dade Community College does not publish information on faculty ages and distribution (Office of Dean, personal communication, 1999).

There are a number reasons that many people want to investigate the site where they work: intrinsic interest, convenience, familiarity with personnel, facility for finding resources, ease of collecting documents, intimacy, curiosity to know more, and desire to improve the institution. These very same advantages can also serve as disadvantages too. If the researcher is too close there is a possibility of corruption of the data. There is also the possibility that the research will cause problems among the researcher and the participants. Conflicts with the institution's administrators can occur and may result in the revocation of permission to do the research. The institution may wish to prevent the research from being published if the results are unfavorable. Certainly these were factors I

considered in my decision; however, there are other reasons that make Miami-Dade Community College an attractive research site.

In their book, *Access and Excellence: the Open-door College*, Roueche and Baker (1987) researched the question: Can both access and high academic standards be achieved? They decided to do an in-depth case study of Miami-Dade Community College because a national panel of experts, according to specific criteria, had chosen the College as representative of the best among this country's community colleges (1987). Furthermore, it is difficult to read in the literature about community colleges and not come across references to Miami-Dade Community College. If not one of the best community colleges in the country, it is certainly one of the biggest and that carries some weight.

In July of 1992, Dr. Robert McCabe, president of Miami-Dade Community College (1980-1996), was awarded a MacArthur Fellowship for "his work in education, namely educational reform in community colleges of the U.S. and Canada" (Maureen Atwell, Program Administrator, MacArthur Fellows, personal communication, 1999). During this period of time McCabe directed the institution towards revamping the general education requirements, re-establishing emphasis on the transfer mission of the college and instituted the Teaching and Learning Project. The effects of these changes are still evident at the institution.

In 1993, TIAA-CREF awarded Miami-Dade Community College the Theodore M. Hesburgh prize for Faculty Development in Support of Teaching and Learning. This was based on the work the College had done in developing The Teaching and Learning Project which significantly changed the criteria for faculty promotion. The new system moved away from a credit and degree based system to one that uses excellence in teaching criteria. According to Roueche and Baker, citing Wilson, (1975), "literature on improving college teaching through innovation mentions Miami-Dade Community College as a leader in terms of setting up a faculty and professional development center" (p. 176).

Roueche and Baker list the following characteristics of excellent teachers, which they believe the Miami-Dade Community College faculty, demonstrate. They are divided into three categories, motivation, interpersonal, and intellectual. The 14 characteristics are:

> A professor who (1) has a strong commitment, (2) sets goals for her- or himself as well as for students, (3) sees the larger context of the subject matter, (4) has a positive regard for all students, and (5) feels rewarded when students succeed demonstrates motivational qualities. Second, a professor who (1) has an objective outlook when evaluating students, (2) is fair and listens actively, (3) establishes good rapport with students, and (4) is aware of the thoughts and feelings of others, exhibits interpersonal skills. Finally, a professor who (1) individualizes and personalizes instruction, (2) is well organized, (3) gets students involved, (4) demonstrates a depth of knowledge of his subject, and (5) is creative and innovative, possesses qualities from the third category -- intellectual skills (1987, p. 15).

Most of these are the same or similar to 29 MDCC statements of faculty excellence (see Appendix 2). One notable difference is that Roueche and Baker list innovation and the College does not. Nevertheless, the College's emphasis on and support of professional development in teaching makes the institution more appealing for my research question as there is more incentive for the faculty to improve teaching methods.

The community colleges in the state of Florida receive funds designated for staff and program development. At Miami-Dade Community College, the money is used to support centers: staff and program development personnel, training materials, and software and hardware necessary for training. At one time these were called Centers for Teaching and Learning and they now are called Centers for Training and Development. They exist primarily for in-house training of college personnel. Each campus has its own center; however, the personnel at the centers are responsible for training in specific areas and may be assigned to give workshops at any of the campuses. College-wide, in the 1997-98 academic year, College Training and Development offered 388 workshops; 278 (72%) of these were technology training programs; 110 (28%) were non-technology-based. There were 3, 656 participants in the workshops with 1, 905 (52%) taking technology based workshops and 1, 751 (48%) taking non-technology workshops (MDCC, CTD Report,

1998). It is interesting to note that while the vast majority of workshops are technology training programs only slightly under half of the participants were in non-technology-based workshops.

During the 1997-98 academic year, the College made efforts to upgrade the computers and to provide new equipment to faculty and staff. At the Kendall campus, this resulted in every faculty member having a computer. Faculty had a choice between Apple or Dell (DOS based) and either desktop or laptop computers. In addition, training to familiarize the faculty with the computers was offered to those who felt they needed it. According to Traci Henderson, Director of Computer Network Services, all installations were completed by the end of the academic year. Marie Nock, Director of the Center for Training and Development, says that she believes computer literacy among the faculty is above 98% (personal communication, 1999).

There are approximately 3,665 computers on the inventory, and roughly 2,500 in service (excluding those obsolete and damaged) at Kendall campus, including the computers in 60 laboratories. This number fluctuates according to Traci Henderson (personal communication, 1999). Laboratories are proprietary and assigned to departments for management purposes. All maintenance requirements are taken care of by Computer Network Services. There are two laboratories, one Apple and one DOS, that belong to the Center for Training and Development. These laboratories are primarily used for workshops and are occasionally used for credit and non-credit classes. In addition, both laboratories provide 20 hours per week during which they are open to faculty and staff. Support staff in the laboratories are available for tutorial training and other support of the computers and software.

Finally, Miami-Dade Community College has been involved in developing and implementing alternative programs and instructional technology. "A few college districts, most notably Miami-Dade (Florida), Coastline (California), Chicago, and Dallas, have

become widely recognized for the sophistication of their [ITV] programming," say Cohen and Brawer (1982, p. 150). In the late 1970s and early 1980s, Miami-Dade also combined computer-managed and computer-assisted instruction. The courses used mainframe computers. So the College has a history of innovation both in programs and in educational technology. Currently the College has been involved in expanding its Distance Education program through a grant project, called Virtual College.

Interview Paradigm

> If you want to know how people understand their world and their life, why not talk with them? (Kvale, 1996, p. 1).

After reading about innovation diffusion, change theories, personality theories, social interaction, and perusing various research proposing this or that narrow reason, I still had not found the answer. I also sensed that not only was the answer lacking but that the manner of investigation was wanting. I wanted to find people who do not use computers and just ask, "So, how come you don't use them?" I looked for a study paradigm, a research model that would facilitate directly asking the question. I wanted to hear the answer to the question in the voices of the people who are the subject of the study, those who are not using computers. There are a lot of popular assumptions about these people. Just ask anyone, anywhere, why they think teachers do not use computers and not one person will say, "I don't know." Everyone has a quick answer, an opinion. I have heard: fear, age, laziness, conservatism, stuck in their ways, resistant to change, incapable. Often even professors state these notions authoritatively as if they were truth. I heard one professor in the school education venture, in a professorial tone, an "authoritative opinion" from the above list. I did not ask him to be on my committee.

"There is a simple principle which is a bar against all information, which is proof against all arguments, and which cannot fail to keep a man in everlasting ignorance -- that principle is contempt prior to investigation" (Spencer, in Alcoholics Anonymous, 1976, p. 570). There has been some attempt to get at these characterizations and some of the

research assumes a priori knowledge, offered without research, such as the following: "Fear and hesitancy about using advanced technologies is largely a fear of unknown consequences" (Anglin, 1991, p. 7). Rogers (1995) and Herling (1994) suggest that in-depth investigation of non-adopters through means other than surveys, through qualitative designs, is needed.

If the phenomenon that is sought is a non-action or an internal action without external behavioral manifestation, then it is not readily observable. The decision people make not to do something is this kind of phenomenon; it cannot be seen. What can be done is to ask. We can ask for description as the process occurs, for recall of previous thought, for reconsideration and re-evaluation, and for projection into a future. The only way to see these kinds of things is directly, face-to-face, synchronously. The interview is the obvious choice; which interview format is the next question.

There are structured interviews that are essentially a variation of the survey. Instead of the participant filling out a form, the interviewers ask a set of specific questions, from which they never vary, and record the answers, in a strictly controlled manner. This is a virtual survey, hiding under the skirts of a warm bodied interview. It is precisely the survey, the predominant research form in the literature, that Rogers (1995) suggests moving away from. I did not want to replicate; rather I wanted to discover. The survey format restricts the participants; it is a priori control of what is important. Mishler, who is very critical of using the survey format in interviews, says, "Defining interviews as speech events or speech activities, as I do, marks the fundamental contrast between the standard antilinguistic, stimulus-response model and an alternative approach to interviewing as discourse between speakers" (1986, p. 35).

The very inflexibility of the survey format strikes hard against its adoption. If we do not know the answer or suspect those answers, which have been tendered, then a more open, exploratory approach is required. At the other end of the interview spectrum is the

open-ended interview. This style is free flowing, freewheeling, and goes where the participants lead. It is highly interactive and conversational and, thus, very sensitive to the role of the participant. The participant has great control in the interview. The problem is that I may or may not get the research questions answered. I might become swamped with data from the conversation and still not have touched the study's focus.

The obvious compromise is the semi-structured interview. This format relies on an interview guide, a series of stimulating open-ended questions, to focus the interactions on the research questions, Furthermore, it allows the interviewer to follow leads from the participants. The interviewer is not held in a strict routine but is allowed, even encouraged, to be alert to emergent notions. The questions in the guide, while formulated around specific areas of interest, are not closed and fixed. The best questions for this format cannot be answered simply with a "yes" or "no." So, rather than, "Do you use computers?" the question might be, "What do you think about computers in teaching?" These open-ended questions encourage the participants to speak more extensively about the subject of the question. As Kvale says, "Interviews are conversations where the outcome is a coproduction of the interviewer and the subject" (1996, p. xvii). Another aspect of the non-survey, the open-ended interview is that it allows for more than just the primary research questions. Thus, I could get the background and contextual information I should have in order to build a complete picture. Furthermore, through the interview, I can get to know the individuals and establish a relationship, albeit temporary. I get to know their context for their decisions and their actions. I get to know the why, as well as the what, of their thinking.

Interviews, in a sense, allow for multiple cases, which is similar to repeating an experiment. "Every case should serve a specific purpose within the overall scope of inquiry. Here, a major insight is to consider multiple cases as one would consider multiple experiments -- that is, to follow 'replication' logic" (Yin, 1989, p. 53). By having a

number of interview cases, I can cross check and look for similarities and differences among the participants' responses. This multiplicity goes a long way toward building a thick, rich description. The similarity of the work context of the participants also improves the ability to cross check. Multiple interviews further allow me to extend the selection process. I can purposefully choose participants with a broad range of criteria and, thus the multiplicity permits looking for internal generalizations during the analysis (Tesch, 1990).

Human discourse, talking, conversing, storytelling, is the oldest form of knowledge transfer. They are forms that are among the most familiar and most comfortable for us. "Questioning and answering are ways of speaking that are grounded in and depend on culturally shared and often tacit assumptions about how to express and understand beliefs, experiences, feelings, and intentions" (Mishler, 1986, p. 7). The comfort of the participants, for what may be a sensitive topic, was a concern for me for reasons of simple kindness and courtesy as well as for more reliable data. People, I for one, often resist and resent being boxed in and feeling forced into either/or choices. My grandmother, Nana, used to always tell the story of the lawyer who asked the man, "Do you still beat your wife?" and then instructed him to answer simply "yes" or "no." The quandary caused by this forced choice is that if he answers "yes," then he beats his wife and if he answers "no," then he used to beat her. In all cases, he is a wife-beater. Likert scales are only a broadening of choices but this broadening is done more to improve the instrument than to improve the feelings of the participants.

Discourse flows. It is dynamic and human. In interviews, the people are not subjects subjected to experiments; they are participants in a human and always humane endeavor. There obviously are research questions that do not lend themselves to this type of investigation. Certainly, I do not want drugs tested solely by interview and anecdote. The question in this study, however, does lend itself to a semi-structured interview

paradigm. The interview, as described, suits the needs of the research question and fits my Weltanshauung, my worldview.

The In-depth Phenomenological Interview

> It is surprising how much people are willing to say to those whom they believe are willing to listen (Eisner, 1998, p. 183).

While reading and preparing for the study, I came across Irving Seidman's research on the work of community college faculty. His research is useful in understanding the nature of community college teaching but, more than that, his work was done through a process he calls, "in-depth phenomenological interviewing" (1985, p. 15). It is a spaced, three interview, open-ended format. My interview design owes much to Seidman's model. I adopted and adapted his basic structure to suit my research question and resources. Seidman wanted to know the nature of the work of community college teachers; so, his interviews were longer and involved more people. He had more time, more personnel, and more resources available. His reporting relies heavily on carefully edited stories, profiles, of the community college faculty, with limited commentary. My question is more restricted and my resources are more limited; therefore, I cut the time of the interviews and the spacing. While he has three 90-minute interviews with a participant over a period of three weeks, I conducted three 50-minute interviews over a period of one week. However, other than that, I only made modifications that are appropriate to the narrower scope of the study questions. So, while I never saw his interview guide, I would assume that his questions were much more open than mine.

I follow the three interview pattern and, as he suggests, use his foci for each interview. The first interview focuses on history and background; the second on primary questions; and the third on reflection. Seidman warns us that it is important to maintain the structure. Not only does the three interview format give a focus to each interview but it also allows for internal checking by both the participants and the researcher. I could follow-up on threads, leads, and ideas and clarify confusions and misunderstandings. The

participants could modify, clarify, reconsider, rethink, expand, explain, restate, and reshape the interview and the data. The objective of the interviews is to discover what the participants see, feel, and believe, within their life space, about the questions. This format of three interviews creates a modified member check. The use of three interviews with multiple participants creates credibility. The analysis is not constructed upon the views of any one participant, through only one encounter. So, not one person dominates the data and the risk of an individual who has a bad day distorting the data is eliminated. Thus, we have a stronger chance of drawing a picture and catching the thief of truths with more witnesses from various perspectives, even allowing for the Rashômon effect (Wolcott, 1994). The participants are asked at the outset of each subsequent interview for their reactions and reconsiderations. They are asked for reflection throughout the third interview and specifically for reflection about the entire process at the end. This helps to improve confirmability within each case. Thus the structure goes toward building internal trustworthiness (Guba and Lincoln, 1985).

The interview format, as it is structured, also encourages a gradual building of trust and inter-knowing. Kvale (1996) deconstructs the word into inter and view and points out the introspective nature of the process. Thus, I know them better than they came to know me. Rather than, as I suggested earlier, just springing the big question on them, the process builds towards it. All along the participants are aware of the focus of the study. I make the focus of the study clear to them during the selection and consent process and I also remind them at the beginning of each interview. By beginning the first interview with their background, I obtain the necessary contextual data while building a relationship. Asking about the participants' past serves as a gentle icebreaker that comes with the added bonus of valuable information.

The interview is a powerful research tool that remains respectful and humane. It yields mountains of rich data. It encourages involvement from those interviewed, which is

why they are called participants. The data are coproduced. Done well, the interview is a positive experience for all, while it discovers and illuminates.

The Debate

> To prehend the former--say a friend or neighbor or enemy--you must perceive him as the personal history of a singular constellation of activities which together compose the individual's endeavor to keep living and growing--that is, to hold intact yet expand his "form world" among other beings similarly occupied. You may prehend him conceptually, as do the social sciences, or by sustained intercommunication and communion. You will recognize that much as you may desire he should have a fixed character, whose actions you can reliably predict, he does not have such fixity. You cannot rely on his repeating as inanimate objects repeat. Nor can you prehend the future actions of one person from those of another, nor of the same person from one time to another. (Ames, 1969, p. 111).

I once had a Ukrainian student, Inid, who was as pessimistic as they come and yet she was bright and good-natured. All of us in the class would chide her about her negativism, her woe's me attitude, and her persistent perplexity from encounters with the world that fed her subtle paranoia. We joked that it was the Russian influence, all that Tolstoy and Dostoevsky, dark and ponderous or maybe it was the famously long winters, we would speculate. Inid took it all in good spirit and would retort with another dismal prediction, all the while insisting that she was not a pessimist but a realist.

One day I drew a simple picture of a glass with a horizontal line at its mid-point representing a liquid. I explained to everyone that the glass was eight ounces and that there were four ounces of water in it. I asked Inid if the glass was half empty or half full. Without a second thought she said, "half empty of course!" Thinking that I had her trapped, I began my optimist/pessimist lecture and she politely listened. When I had finished, I said, "So, you see it is all a matter of attitude." Inid, never one to be out done, quickly returned, "I know that the glass is half empty because I know that in a moment I will drink some water!"

The disagreement between quantitative and qualitative research is one of paradigms, different ways of seeing the world (Guba and Lincoln, 1985). The difference is not so

much the half full/half empty, optimist/pessimist description of the four ounces of liquid in an eight ounce glass. The qualitative/quantitative split is more akin to throwing light on the glass of water to make sure there is exactly four ounces and that the glass is an eight ounce glass versus passing the light through the water and the glass in order to reflect a spectrum of color on the desk outside. They are very different and yet both are valid (in the non-statistical sense) ways of viewing, seeing, interpreting, and reporting their perspectives of the slice of the universe under consideration. Nevertheless, even with these differences both qualitative and quantitative need to address issues of validity and reliability. We cannot have an "anything goes" attitude in research. The following is my summary and my resolution of the debate about validity and reliability.

The quantitative definitions of reliability and validity are relatively secure and immutable. Quantitative methods are based on, and modeled after the scientific method and the methods are followed rather systematically. It is much like a computer program flowchart; it is binary. If you say "yes," then you must go to the left and answer the next set of questions. If you answer "no," then you go to the right and answer those questions. In quantitative research there is no debate about the meaning of the terms validity and reliability. They are functional terms with specific and widely accepted meanings. In published research, you will never encounter a discussion of their meaning, use, relevance to the study, or a reinterpretation of their essential concepts. There is no semantical debate. Quantitative research accounts for reliability and validity and "threats" to each in its design and implementation. Conclusions are drawn and everyone goes home relatively satisfied. Readers of the research never question the terms either. They look to see that "the threats" were adequately accounted for and that the procedures were appropriate and correctly implemented. Then they can rest assured that the research is valid and reliable within quantitative limits.

This relative consistency in the meaning and use of these two terms is virtually non-existent in qualitative research. Qualitative researchers are not even in agreement on whether to use these two terms. Qualitative researchers are not only defining themselves as non-quantitative and anti-positivist but are discussing various views of credibility issues. While this is due to many factors that are comprehensible and reasonable, factors such as the breadth of the fields involved, the variety of research called qualitative, and the historical context, it can be confusing. In order to put some order into this discussion, I divide qualitative positions into three groups and offer examples of each group. Then I will explain how I came to terms with the terms.

The first group uses the qualitative terms much as they are defined by quantitative research and they fit the qualitative research to them. Goetz and LeCompte (1984), from ethnography, are representative of this view. They ask essentially the same questions of qualitative research that quantitative researchers do:

> Is the research measuring what you want to measure? (Internal validity)
>
> Are the results applicable across all groups? (External validity)
>
> Could other researchers come to the same conclusions? (Internal reliability)
>
> Could others reproduce the research? (External reliability)

They believe that qualitative research is strong on validity and weak on reliability as they define them. Their somewhat rigid adherence to quantitative definitions and proofs is too inflexible for my needs.

The second group rejects the quantitative terms and offers new terms, with new definitions that they believe are better suited to qualitative designs. This view is, perhaps, best represented by Guba and Lincoln (1985). They offer trustworthiness for credibility. They suggest transferability, for external validity. Transferability results from thick description and analysis, which looks for "fittingness" and similarities. They offer dependability for reliability and suggest multiple methods. They offer confirmability, which

seeks to determine the internal accuracy of the data and suggest audit trails and reflexive journals. Much of their trustworthiness relies on the use of an external auditor and/or other researchers, a practice that is somewhat difficult for a lone researcher, such as I.

The third group relies on commonsense descriptions of reliability and validity. Kvale (1996) and Eisner (1998) represent this position. Kvale notes that validity is not an uncommon term. We regularly talk about valid inferences that are based on sound data and we have commonly known what this means. He states that credibility is largely based on the "craftsmanship" of the interviewer (Kvale, 1996). Generalizability is much left to the researcher and external generalizations and applications are left to the reader and other researchers (Eisner, 1998). Reliability is built through sound, honest, ethical, researching by a capable, experienced, and preferably trained interviewer. Kvale's craftsmanship and Eisner's connoisseurship rest much of the question of credibility on the back of the researcher. Kvale says that for the craftsman validate means check, question, and theorize. In this group, intersubjectivity overrides the issues of objectivity and subjectivity and pushes the terms into the relationship between the researcher and the participants. According to Kvale (1996) validation is at work at the seven stages of qualitative interviewing he outlines:

> 1. Thematizing. The validity of investigation rests on the soundness of the theoretical presuppositions of a study and on the logic of the derivations from theory to the research questions of the study.
> 2. Designing. The validity of the knowledge produced depends on the adequacy of the design and the methods used for the subject matter and purpose of the study. From an ethical perspective, a valid research design involves beneficence -- producing knowledge beneficial to human situation while minimizing harmful consequences.
> 3. Interviewing. The validity here pertains to the trustworthiness of the subject reports and the quality of the interviewing itself, which should include a careful questioning as to the meaning of what is said and a continual checking of the information obtained as a validation in situ.
> 4. Transcribing. The question of what constitutes a valid translation from oral to written language is involved in the choice of linguistic style for the transcript.
> 5. Analyzing. This has to do with whether the questions put to an interview text are valid and whether the logic of the interpretations is sound.

> 6. Validating. This entails a reflective judgment as to what forms of elevation are relevant to a specific study, the application of the concrete procedures of elevation, and a decision on what the appropriate community is for dialogue on validity.
>
> 7. Reporting. This involves the question of whether a given report is a valid account of the main findings of a study, as well as the role of the readers of the report in validating the results (Kvale, 1996, p. 237).

While all three of the groups have contributed much to my knowledge about the nature of the questions and I have referred to them all throughout the study, my research paradigm is essentially in-depth phenomenological interviewing. So, because this design owes much to the work of Irving Seidman's ideas about in-depth phenomenological interviewing, it would be well to insert his words into the reliability and validity discussion. Referring to Kvale, Mishler, Guba and Lincoln, as well as others, Seidman says,

> Such a discussion suggests that neither the vocabulary of "validity" nor "trustworthiness" is adequate.
>
> Yet, in-depth interviewers can respond to the question, "Are the participant's comments valid?" The three-interview structure incorporates features that enhance the accomplishment of validity. It places participants' comments in context. It encourages interviewing participants over the course of 1 to 3 weeks to account for idiosyncratic days and check for internal consistency of what they say. Furthermore, by interviewing a number of participants, we can connect their experiences and check the comments of one participant against those of others. Finally, the goal of the process is to understand how our participants understand and make meaning of their experience. If the interview structure works to allow them to make sense to themselves as well as to the interviewer, then it has gone a long way toward validity (1998, p. 17).

At a time during my research into questions about validity, reliability and triangulation, I was hard pressed for answers; so I looked up Irving Seidman on the Internet and e-mailed him. He essentially validates what he said in the book but I, also, had asked him about the issue of triangulation, which he had not mentioned in any of his texts. I think it serves to quote his e-mail:

> Now about triangulation and validity issues. I think these issues are very difficult and complex in in-depth interviewing with a phenomenological base. That is, what we are trying to do is understand how the participants construct their experience and make meaning of it. Then there is the question of whether their construct of their experiences is

> true. The first question for me is, is it true for them? Have they thought seriously about their experience, had a chance to talk in detail about it? Does what they say in the second interview and third interview make sense with what they said in the first and second interview? Does meeting with them three times give them a chance to eliminate from the construction idiosyncratic responses because of a bad mood or an off day during one interview? The question of triangulating one person's construction of experience with another's construction of the experience is tricky. I think you can get some overlap, but like the movie Rashômon, I wouldn't be surprised to get different views (Earl I. Seidman, personal communication, 1999).

I have come to the following six questions which summarize my notions concerning the issues of reliability and validity. I believe that satisfactory answers to these questions will yield reasonably believable results, whatever language we use.

1. Is the researcher credible?
2. Are the data believable?
3. Are the interpretations and the inferences valid (as commonly understood) and believable?
4. Is the research conducted and reported responsibly, ethically, morally, and honestly?
5. What can be reasonably concluded from the study?
6. How important and relevant are the findings for anyone?

More of my opinion in regard to these matters and my attempts to satisfy their concern are found in detail and other sections of the study. In the various sections of this study I make every effort to explain in detail procedures, theories, analysis, checks and balances, biases, and participants' involvement. Throughout the study I struggle to make the work credible, trustworthy, reliable, valid and worthwhile. I have tried to make sure that my own questions, listed above, are answered satisfactorily. In the final analysis, like Eisner, I believe it is up to you to decide for yourself. "I believe, with Dewey, that a transactional orientation to the process of knowing allows us to avoid the dualisms --

objective and subjective -- that have led to so much mischief in the methodology of educational research"(Eisner 1998 p. 60).

Chapter IV

Procedures

> The distinction between process and product of reflective inquiry is thus not fixed and absolute. In calling the process 'psychological' and the product 'logical,' we do not mean that only the final outcome is logical or that the activity that goes in a series of steps in time and that involves personal desire and purpose is not logical. Rather, we must distinguish between the logical *form*, which applies to the product, and the logical *method*, which may and should belong to the process.
> (Dewey, 1933, p. 75).

The procedure section covers a number of topics: consent and permission, the interview guide, the selection of the participants, the interview structure and process, transcribing, verification, pilot interviews, oral verses written data, two exceptional cases, analysis, the journal, and documents. The interpretations and conclusions based on the data are in other sections. The process began with submitting the proposal to the university and the research committee. Once the proposal was accepted, it was passed on to the University Research Council, along with the interview guide. After I had permission from the University, I sought permission from the research site by submitting my proposal and interview guide to the Dean of Instruction of the Kendall Campus and the director of Institutional Research of Miami-Dade Community College. The interview guide was essential in all of these processes.

The interview guide, often called the research schedule (Guba and Lincoln, 1985) is a set of interview questions for each of the three interviews. The questions were generated based on the literature, the basics of research, and my interests. For example, the literature suggests that accessibility to computers, support from the institution, and attitude are influential in the decision to adopt computer use and there are questions in the guide that aim to discover issues in those areas. Demographic type questions about age, gender, ethnicity, discipline, and tenure are fairly standard questions that are usually asked in survey form but I felt they were best answered by the participants through the interview. Ethnicity, for example, in a survey can cause consternation. M related a story about how

she was ethnically categorized and "pigeon holed" several times by the institution in an uncomfortable way and she had some consequent resentment. Though the others are fairly straightforward and less contentious, asking the questions in the interview serves as an icebreaker and also allows for exploratory questions, such as, "how do you identify yourself?" Other questions came from my interests; for example, the questions about influences and relationships.

The basic intent of the questions is to build the context, background, and history of the participants. The idea is to get sufficient information to paint a picture of them. The guide attempts to get at information about their influences, motivations, and to let them tell about what is around them and inside them. You may notice that the questions never ask anything that can be answered with a simple yes or no; the questions are purposely open-ended. The purpose of the guide is to shape and direct the flow of the dialog that generates the data; it is not a substitute for a survey.

In that the interviews are intended to be the primary source of data, a great deal of thought and consideration went into designing the interview guide. There is intentional overlapping of questions in order to try to see some of the ideas from different angles. The tone of the questions is intended to demonstrate to the participants that their feelings and perceptions are more important than "hard facts." I paid particular attention to phrasing questions in ways that would not indicate bias. Though I had written the questions, it takes a better actor than I to deliver memorized lines with originality and reading them was no more ingratiating. So, I would glance at the guide, then paraphrase the written question and attempt to sound conversational. I was, also, particularly concerned about not leading the participants to specific answers. The open-ended questions continuously attempt to stimulate the participants to speak about and for themselves. After I asked the question, I made sure to give them sufficient time to respond; the power of silence works to stimulate

response (Mishler, 1986). I endeavored to tip the balance of the "conversation" well in the participants' favor. It was, after all, their story that I am interested in.

I did not wish to put off the participants by using jargon (Kvale, 1996) and computer terms that were outside current educated lexicon. I, also, stayed away from professional education terminology. I was concerned about not using jargon related to any field. For example, I struggled with the problem of trying to find out about their methods of teaching without using education labels and without observing their teaching. I did not want to elicit discussions about particular educational philosophies and methodologies. Such discussions are fraught with pitfalls. We could have very easily fallen into extended exchanges about the meanings of different terms and even if we were to agree on the meanings of the words, it would be difficult to ascertain if the participants were actually demonstrating what they said they believed. I arrived at what I believe to be an elegant solution for this quandary. I simply asked them, "Would you talk me through a typical class, from the time you prepare until you have closure for it?" Through this question the participants were able to tell me what they do by describing behavior rather than talking about theories and ideas. They decided what was typical. They decided what was salient and important about their teaching, and what they wanted me to know about it.

If I were to have gone to their class to observe their teaching I may or may not have hit a typical day and in any event, what I see in observation is not necessarily what they would want me to know. Good observation technique requires a pre-observation interview to have some idea of the professor's intent for the class, an extended observation, and a post-observation interview to compare observations with the teacher's perceptions. The verbal "walk-through" more efficiently allowed the participants to give me the picture they wanted me to have of their teaching. Other questions helped to shape the picture of the values that these teachers have in regard to teaching. For example, the question, "How would you describe yourself as a teacher?" solicits information about what they think is

important about their teaching. This was also the aim of asking the participants to tell me what they would want me to know about them if the interview were for a job. There are other questions which contribute to the picture: What qualities should a teacher have? Would you recommend yourself and why? What is the role of the teacher both personally and in terms of the society? The overlapping foci (a sort of triangulation, if you would) such as these afford me a very good perspective of their values concerning teaching and how these values are manifested in their teaching.

The pilot interviews and the feedback that I received from the participants in the pilots greatly helped to shape and revise the interview guide and helped me to practice and smooth my style of interviewing. The guide was flexible; it was a guide, not a leader. I did not follow the exact sequence of the questions within and interview; I did, however, stay with the guide in terms of which questions I asked in each interview. Each of the interviews had a general focus: interview one focuses on the demographics, history and background; interview two focuses more on the primary and secondary research questions; and interview three focuses on reflection, meaning, and self perception. Seidman (1998) cautions us that it is important to maintain these distinctions in order to derive the most benefit from the three-interview process.

I maintained reflective notes and used these to make changes to the guide. I used a fresh copy of the guide for each interview, which allowed me to make notes about additional questions and threads as they came up during the interview. The notes I took were generally made after the interview finished, as I did not wish to distract the participants from the interview process. I wanted them to feel "heard" and deflecting my eyes and writing while they are talking does not foster the feeling that I am paying close attention to their words.

There were three questions that became standard but were not included in the interview guide. At the beginning of the second and third interviews I asked, "What, if

anything, have you thought about since our last meeting?" This question encourages reflection on the process and content of the interviews. I would also ask if they had any additions or modifications they would like to make to what they had said. I did not encourage them to delete but to add to or clarify what they had said. This encouraged reflection and also served as a sort of member check. For example, in the case of L, he responded to this invitation in this way:

> L Well actually when you're talking about reflection I was thinking about that because uh there was one thing that I wanted to clarify. I don't know if I gave you the wrong impression that I am anti-computer because I am not. It's just that
> B Wouldn't matter if you were (laugh) to me
> L No right no no I am saying no it's just because you know you asked me about things that I thought. That was the only thing because I am not. It's just where it's appropriate and that's basically how I feel about that. (L 3.3.1, 11-17).

In the consent form, I made it clear that I would provide the participants with a copy of the tapes of the interviews but that I was not disposed toward providing copies of the transcriptions. I considered the advantages and disadvantages of allowing each participant to review and edit the transcriptions. Seidman (1998) discusses the potential for problems arising from such review. Kvale (1996) frequently allows for participants to review their transcriptions and make corrections. In one case, a professor felt that something he said might affect the enrollment in his department and in another case a participant felt that the language did not reflect his level of education. In both cases Kvale allowed for changes. I was not comfortable with these kinds of changes. I also know how faculty can become interested in hair splitting, semantical debates. I discussed this problem with one of the pilot participants who had had similar problems with a focus group of individuals she had interviewed. She recommended that I avoid the potential pitfalls and I think it was the ethically correct choice. Identities are confidential and I often edited quotes based on the transcriptions to read intelligently without sacrificing the participant's meaning and intent as Mishler (1986) suggests.

At the end of the third and final interview, I would ask them how the process felt to them. I encouraged them to give me feedback and especially to let me know if they had been uncomfortable. All of the participants were very positive about the experience. None of them found any of the questions or the interview process uncomfortable. Some of their statements are in the section on the role of the researcher.

All the interviews were audio-recorded and later transcribed to paper. The transcription process follows the suggestions of the literature (Kvale, 1996; Mishler, 1986; Seidman 1998). Two people, my stepson and I, made the transcriptions. There was an agreed-upon guide for how the transcriptions would be done. The transcriptions include all pauses, stuttering, repetitions, false starts, interruptions, laughter, coughs, etc. Some researchers measure the length of pauses and note their length in the transcriptions; however, I felt that for the purposes of this research that such information was not necessary. I inserted nonverbal behavior into the transcriptions based on my notes; for example, C's pencil tapping, and R's table banging were noted. Facial gestures in general were not noted. Only occasionally, and only in the most obvious cases such as overt sarcasm, was tone interpreted and inserted into transcriptions. I attempted to insert some punctuation as I was transcribing but I instructed my stepson that it was not necessary for him to do so. I found that in reading the transcriptions the punctuation did not necessarily facilitate analysis. I did insert punctuation into the quotes, and made judgments about where sentences began and ended. We did not have a standardized interjection guide which would have been better. For example, I would write, " ah" and my stepson would write, "a." I do not believe that these differences ultimately made any difference in understanding and interpreting the data. We used XXXs in place of words incomprehensible even after repeated listenings and left them as XXXs in all quotes in which they occurred.

Pilots

> Trying out the questions in pilot form, at least mental rehearsal, should be routine. (Stake, 1995, p. 65).

The usual purpose of the pilot is to collect preliminary information that better informs the construction of the design of the "actual" investigation. In an interview design the purpose is usually to practice the process and to correct mistakes (Kvale, 1996; Merriam, 1995; Mishler, 1986; Seidman, 1998). My pilots served multiple purposes of practice, correction, and data collection. I selected my pilot participants because they fit my profile and are colleagues whom I know well enough to give me unadulterated feedback on the process. I needed their responses to the interviews and their perceptions, thoughts, and feelings about the process.

The pilots were conducted in exactly the same manner, with the same format, and with essentially the same interview guide. The only major difference between the pilot and the other interviews is that at the conclusion of each pilot interview, which was marked by stating, "that's the end of the interview," there was a period for feedback and discussion. During this discussion, I explained my intent for various aspects of the design and the pilot participants told me if it seemed to work or not. I was particularly interested in their affective responses to the process and I was glad to find out that they were very comfortable. They made many suggestions; some of which directed modifications. For example, the inclusion of the explanation at the outset of each interview came from the pilots. In another example, the first pilot interview was with N. We twice met in restaurants and once at my home. These experiences quickly taught me the need to meet at a site that would be less disruptive to the interview. One restaurant had a baby crying off and on and another restaurant had excessive traffic noise. The background noise was not a problem in terms of conducting the interview but was certainly a problem in making the transcriptions. All other interviews from then on were conducted in a more isolated and decidedly quieter environment.

Working with two people whom I have known and trusted very much helped me build my confidence and ability to smoothly conduct interviews with participants whom I

did not know well. The feedback process from the pilots also suggested that I might ask all of the participants for feedback at the end of the final interview. I included this suggestion for feedback, and while it was much less specific, I believe it was a good idea and it generated data about benefits to the participants.

Because there were no major, significant changes in the process during the pilots, and because the pilots were virtually the same as the other interviews with the exception of the extended feedback, I felt it was appropriate to consider the contents of the interviews as part of the overall data. In fact, their views enriched the study.

Transcriptions were proofed by the word processor for typographical errors but were not checked for grammar for obvious reasons. Each of the transcribers randomly checked the transcription of each tape the other had transcribed and noted corrections. No attempt was made to listen to all of the tapes in this manner. The transcriptions were referenced by participant code, interview number, tape number, transcription page number, and line number. This greatly facilitated citing and locating the data. Thus, a citation such as JA 2.3.8 431-433 refers to specific location in the data in the following way:

JA identifies the participant;

the two identifies the tape number;

the three identifies the interview number;

the eight identifies the transcription page number the;

431 identifies the beginning line;

433 identifies the ending line.

Mishler (1986) and Kvale (1996) discuss the differences between oral and written discourse. They both suggest that care be taken to render oral transcriptions in sensible written form. The reader should not be burdened with all of the stuttering, false starts, interjections, and other intrusions into the smooth flow of written ideas. I tend to agree with them and, for the most part, I have follow their suggestions. There are times though

that I did not edit out all of the "unnecessary" oral utterances because I felt that sometimes it was important to leave them in the text in order to enrich the "flavor" of the expression.

Mishler (1986) citing Oakley says that while much of sociology depends on data gathered from interviewing, "very few sociologists who employ interview data actually bother to describe in detail the process of interviewing itself" (Oakley, as cited in Mishler, 1986). Because so much of the study is based on the interview, I tend to concur with them.

Interview structure

The structure the interviews was modeled after the in-depth phenomenological interview described in Seidman (1998) and used in, *In the Words Of the Faculty* (Seidman, 1985). I have made modifications to Seidman's original design that are more suitable to the scope of my study. The original design called for three, 90-minute interviews, over a three-week period. My modifications resulted in three 45-60 minute interviews, minimally 48 hours apart. The basic rationale for the three-interview method remains the same, only modified to fit my questions. The first interview essentially focuses on background and demographic information, early influences, motivations for becoming a teacher, and professional progress up to the present. The second interview asks the participants to tell about their methods, relationships to students, attitudes towards computers in general, the perceptions of the institution's attitude towards computers, pressures they might feel, experiences that they have had with computers, their perceptions of support, and their perceptions of accessibility to computers. The third interview focuses on what it means to them to be a teacher, their perceptions of their role as teachers and the role of teachers in society, the process they used to modify their teaching, how they feel when they consider using computers, how they would describe themselves as a teacher, and what they might like to add or clarify. The process builds a context, directly addresses questions, and then moves to reflection and meaning.

Seidman cautions interviewers to stick to the structure. Even though there is an overlapping quality to the interviews, each one has a particular focus that in and of itself is important. "The open-ended, in-depth inquiry is best carried out in a structure that allows both the participant and the interviewer to maintain a sense of the focus of each interview in a series" (Seidman, 1998, p. 13). Not only does each interview build on the previous interview but also the spacing allows for both the participants and the interviewer to reflect on the previous interview before beginning the next one. In the case of the participants, there may be things that they wished to add or modify. As for the interviewer, I found that I needed time to review what was said and decide if there were any points that I needed to raise again or any adjustments I needed to make for the next interview.

I acceded to the suggestion to do two interviews back-to-back with only one of the participants. It was one of the first sets of interviews I did. When we had completed interview one, the participant suggested that we continue with interview two. Within five minutes of beginning the second interview, I knew that it was a mistake. I was beginning to feel some fatigue and I realized that I had not had time to look at the results of the first interview and shape my ideas for the second one. Once we had started, though, I did not feel that I could graciously end the second one. The experience taught me to not vary from the spacing of the three interviews; so, the next time a participant suggested speeding up the process, I declined and explained why.

Because of the experience I had had in the pilot interview with N, I looked for a more suitable environment in which to conduct the other interviews. I was able to schedule a room in the audiovisual center that was small, and had one simple, rectangular table, with four identical chairs, and another table against a wall with a television and VCR. It was well away from offices, and it lacked visual distractions, such as photographs, announcements, etc. It was located in the center of the campus. The room did not look like an office or a classroom. It was a neutral environment but not antiseptic.

Only one of the participants, C, noticed that this room was off to the side of an audiovisual laboratory and that the participants had to pass by a great deal of educational technology, including computers, in order to get to the small room. This did not seem to bother any the participants; on the contrary, C said it made him think more about the possibilities of computers. He mentioned this off-handedly as we were chatting before the tape began. No one else seemed to notice and no one mentioned feeling any pressure from the location. In fact, there were some comments as to how lucky I had been to have discovered such a perfect room for the interviews.

There was always a bit of chatting before I turned on the tape recorder. Often this chatting was not about the interview but there were times that I wish I had had the tape running before and after the interviews. Sometimes very interesting things were said that were not recorded, such as C's comments on the room, mentioned above. Turning on the tape recorder signaled the beginning of the interview for both the participant and me and at that moment there was frequently a slight shift in tone and formality. I would begin by reviewing the purpose of the study and the particular focus of whichever interview we were doing. Evans (1970) in his study of resistance to innovation in higher education which focused on ITV, found that, in spite of all his efforts to the contrary, many of participants felt that his study was an attempt to convince them to use the new technology. So, in the first interview I would be sure to state my biases about computers in teaching and particularly emphasize that while I use computers in my teaching I did not wish for them to think that I was advocating or attempting to convince them to use computers in their teaching.

Seidman (1998) cautions interviewers about unconsciously signaling participants as to what they would like to hear. He suggests that interviewers keep body posture, nonverbal language, and interjections to a minimum. Even nods and simple utterances, such as "uh huh," can send the wrong message to the participants. I attempted to follow

these admonitions and when I was aware of sending such cues I would stop. On the other hand, I used body language and nonverbal cues to signal my interest in all that the participants were saying.

There were times when sensitive personal information came up. While I maintained a respectful and attentive attitude, I did not pursue the topic. As sensitively and quickly as possible, I redirected the participant back to the "topic." There were times when the participants seemed hesitant about talking about others. I would assure them that the tapes, and what they said, were strictly confidential. As far as I was concerned, what they had to say about others was more reflective of them and therefore I never had reason to cite these comments.

Occasionally the participants and I would disagree. Usually this was a disagreement about language. For example, C did not think that it was a decision not to use computers in teaching.

> B Could be could be. Would you describe your thinking involved in your decision to not use computers in teaching?
> C I haven't really made a conscious decision not to use computers in teaching but at the same time I haven't figured out how to use computers to do what I am doing effectively (C 2.2.13, 315-317).

Then later we have the following exchange:

> B So seeing somebody else using this in your field would be useful to you?
> C Yeah
> B in making another decision about this.
> C Right
> B uhm see it's interesting you say that you consciously didn't make a decision. My assumption is that we make decisions continuously
> C Yeah well that's right
> B and that well by default. I also make an assumption that the moment I have asked you to think about it you made a decision again.
> C Well I haven't made a final decision.
> B Tentative decision
> C A lot of tentative decisions.
> B But at that moment and that's part of why my research is going the way it is and doing it in an interview process is that by asking you to think about your decision though you may not have been aware of it at that moment as you're thinking about it you're making it at that time (C 2.2.23, 582-600).

My attitude was to explain my point but, contrary to my personality, not to argue. Frequently, the dialog clarified meaning and allowed the interview to proceed uninhibited.

When I became aware of internal inconsistencies, such as those with M, I would pursue them during the interview. For example, in her case, I just asked her if she could clarify what I was seeing as a discrepancy about her use of computers in teaching.

> B At one point you said, "I don't use them in my curriculum, it is not infused in there it's not there and yet I do take my students to the computer lab and I do do some things with them." So you have this conflictive kind of thing for me.... and even the last thing you say is, "I don't like computers." There is sort of for lack of a better term that cognitive dissonance going on.
> M Remember that I said that I was a child of conflict....and that is where I am in terms of technology (M 2.2.19, 655-658 & 664-668).

It is important to remember that the interview process is a dialog, a kind of conversation with some differences, and not a debate. I would liken the interview process to that of a PBS or NPR talk show. I attempted to take my talk show to the level of Terry Gross, Dick Cavett, or Ray Suarez, rather than the currently popular "ambush shows."

Rarely would I interrupt the participant, but I would interrupt if the person did not understand me. As in the case of one interchange with JO, if I were unable to make myself clear after one or two attempts, I would drop the subject. I would gently intervene to supply words the participants were seeking. I would also redirect the participants back to the topic. As I have said before, I avoided using yes/no questions and I would ask participants to elaborate when possible. I often asked questions for verification and clarification. Occasionally, I would restate what they said in order to assure myself and them that I had understood them. I might summarize and restate what they had previously said, and after they had verified that I had understood them correctly, I would use the exchange as the basis for another question. If they asked me my opinion, I answered them. However, I kept my answers short and to the point. As quickly as possible I turned the

discussion back to them. The participants were primary, my questions secondary, and I was last.

I was punctual and usually early. There was only one appointment that I failed to make do to a misunderstanding. I kept the interviews within the promised time limits even to the point of stopping participants from continuing past the agreed-upon time. I thanked them at the end of each interview for their time and reminded them of our next interview, if there was one. I encouraged the participants to bring something to drink, as a lot of talking dries mouths, and I would have a bottle of water, too. I did not bring food to the interview and only once did one participant bring an orange. I believe these courtesies are essential to establishing a positive atmosphere, rapport, professionalism, and add a necessary sense of seriousness to the process.

Participant selection

The selection of the participants for qualitative study does not attempt to be statistically representative. Nevertheless, I attempted to get a broad slice of the faculty that would reflect the diversity of the institution and consider various criteria from the literature. I paid attention to gender, age, length of tenure, discipline, and ethnicity (see Table 4). I did not consider faculty from business, computer technology, chemistry, theater or music. I eliminated business and computer technology because computers are often the subject of their courses and of course computers would be used in the classes. I eliminated chemistry because colleagues in the department and department chairperson informed me that everyone used computers in teaching. I eliminated theater, music, and other courses that are not in the core curriculum except ESL. I did not eliminate ESL because it represents such a large portion of the courses and faculty.

Table 4

Participants

#	Interview Type	I.D.	Age	Gender	Ethnicity	Tenure	Discipline
1	Out of Profile	JA	40	Female	Anglo	Mid	ESL/ Ed Tech
2	Pilot	M	40+	Female	Jamaican identifies w/ Indian culture	Mid	ESL
3	Pilot	N	56	Female	Polish/ Cuban/ American	Mid/Late	ESL
4	Regular	R	54	Male	Anglo	Late	Social Science
5	Regular	JO	54-56	Male	Southern Rural Anglo	Mid/Late	Physical Science
6	Regular	JC	50+	Female	Anglo	Late	Math
7	Regular	C	54	Male	Anglo w/ Cherokee heritage	Mid/Late	Social Science
8	Regular	L	34	Male	Cuban/ American	Early	Math
9	Regular	D	40's	Female	Afro-American	Early	Social Science

My profile was quite simply: a full-time faculty member at the Kendall Campus of Miami-Dade Community College who did not use a computer in teaching beyond word processing. The Dean of Instruction offered to inform me of people she thought would fit my profile but I declined her offer of help. When explaining why I chose them, I did not want to be in the position to have to say to the participants that their Dean of Instruction told me that they were not using computers. I felt that it would not only put undue pressure on them and cause them to be very uncomfortable but also distort the interview relationship. I had very real concerns about not stigmatizing them. Remember the literature in diffusion of innovations calls them laggards. I did not have prior assurance that they would not be sensitive about their non-adoption, and having no idea, I thought it best to error on the side of sensitivity.

I made all initial contacts in person. I went about finding people by simply walking through departments and asking faculty if they fit my profile. If they said no or if they said they could not participate, I would ask them if they knew someone else in the department who might fit the profile. If the person fit the profile and expressed an interest in participating, I proceeded to explain time and other commitments. I assured them that it would not hurt and that they would remain anonymous. If they accepted my invitation, I would give them a consent form and ask them to read it carefully. If they had any questions, I would answer them to their satisfaction. After they thoroughly understood the consent form, they signed it. We would then set up the first interview appointment.

All the participants were selected from Miami-Dade Community College, Kendall Campus. The reasons for choosing Miami-Dade Community College are discussed in another section. I chose to focus only on Kendall Campus for a number of reasons. Because the permission process of Miami-Dade Community College is much simpler for one Campus, the Director of Institutional Research advised me to stay away from a multiple campus design. Permission for college-wide research needs to have permission up to the

level of the college president. At this time the college and the faculty union are struggling to agree to their first contract. Negotiations have not been going well and I am on the negotiating team. I thought it politic to maintain a low profile. I had thought that my involvement might have been a thorn in the interviews but it was a non-issue. The decision, though, was not based solely on these personal reasons. Kendall Campus completed its efforts to put a computer on every faculty person's desk and Center for Training and Development (CTD) believed that at least 99% of the faculty were computer literate. This significantly and positively affected the factors in the study and the choice of a single campus. Another reason for choosing Kendall Campus is that I have a working knowledge of the physical environment but because I only recently transferred there, I do not have close personal relationships with many of the faculty.

Analysis

> Actual thinking has its own logic; it is orderly, reasonable, reflective. (Dewey 1933, p. 75).

Once the transcriptions were completed, I read and re-read them innumerable times. I looked for patterns, similarities, and marked distinctions. I paid attention to overlapping ideas and repeating or emerging themes. From these I built categories, what the literature calls coding (Tesch, 1990). After the initial coding, I grouped similar categories. I looked for themes in the areas of the research questions, data that illustrated the process, and conflicting data. Only after discovering and categorizing the themes that emerged from the data did I assess them in terms of existing literature and noted similarities and differences. In this process I looked for new themes, divergent themes, confirmation of and divergence from existing literature, and differences in emphasis. An example of differences in emphasis would be that the literature is conflicted over age as a factor in adoption of innovation and I found it of little importance; on the other hand, some of the literature looks at attitude and I found that attitude was very important. The analysis is reported by blending

the literature, the data, and my impressions together. My interpretations and conclusions are in another section.

Role of Documents.

I used a number of sources for obtaining much of the background information. The reason for such information is to establish the setting, the physical backdrop, and work context within which the participants make their decisions. There was some coincidental verification of perceptions, but I did not attempt to confirm every statement and perception of the participants. For example, their perceptions of the CTD workshops are accurate but it would not make all that much difference, if their perceptions did not coincide. The participants' perceptions are what dictate their thoughts, behaviors and the external realities are the stuff with which they interact. What the background documents do establish quite well is that the participants' context is full of opportunity for them to make real choices about whether to use computers in teaching or not. Were the environment poor, computerless, lacking in support, a decision to use or not use is less able to be freely made; i.e., my diet always goes well when there is not much food in the house. The documents were gathered to build the context, the frame, and the canvas for the picture. The participants paint the picture and their words are the paints, their intonations the tones, and their emphases the colors.

Role of the Journal.

I kept a journal, as was suggested by a number of researchers. The journal was reflective. Sometimes, I made notes in my journal during the interview about points to follow up on and shifts the participant or I would make during the interview. This allowed me to record any changes, new directions, additional questions that came up in any particular interview and to record each one individually. I held note taking during the interview to a minimum so as to maintain rapport and to avoid drawing unnecessary attention to anything occurring in the interview. I believe it is more important to listen

attentively to the participants than to have perfect notes. I would take notes during a lull or at the end of the interview after the person had left. Many of the notes were threads I might have wanted to pull on more in the next interview. I also recorded any unusual feelings. Later I would reflect on my impressions of the interview and any other ideas, feelings, or concerns. I was particularly concerned about how I was reacting to the participants and how the participants were reacting to me. I looked for evidence of bias and personal feelings both positive and negative. I also assessed my feedback during the interviews and paid attention to leading questions and non-verbal signals of affirmation or disapproval. Also, the journal helped me work out some of the feelings so that they did not work against me during the next interview. The journal has been an active, reflective process that has helped establish trustworthiness by working against inquirer's biases (Guba and Lincoln, 1988).

Pitfalls in Interviewing

I have said much in favor of the interview but, as we well know, no design is perfect. There are some known pitfalls or threats. These are poor recall, reflexity (also reactivity), and response bias.

Poor recall.

The concern with poor recall is that participants' memory may be flawed and they may have forgotten important information. Furthermore, in general, memory tends to be selective; participants possibly will portray themselves in an unrealistic or exaggerated light. They may choose to relate only those memories that are most favorable to them. I encountered some of this. In those cases where I thought it necessary to probe further, I did so. For example, R mentions that he was in the Peace Corps and there was something about the way he described his leaving the Peace Corps that alerted me. When I probed further I found out that he did not complete his term but rather left early of his own accord. In the study most of the recall focused on past historical background. Only the questions

pertaining to past experiences with computers, training, and software require recall about the primary research questions. They do have some vulnerability to faulty or selective memory. The primary questions are actually asked in the present and, therefore, are less susceptible to recall errors. When I asked participants to consider their use of computers, they make a current effort to think about the computer in teaching. When I ask what would be necessary for them to adopt, they are involved in futurizing. Again, the fact that the perceptions of the participants are what are most important ameliorates the problem of poor recall.

Reflexity.

Reflexity is also called by some reactivity. This threat comes from participants wanting to tell me what they think I want to hear. In fact, there was some fishing on the part of some of participants to see what I wanted. I was able to deflect much of it. Observe this exchange:

> B OK so then the class is over. They start to leave and then what happens
> L All right and now class is over so that's it.
> B That's it OK
> L I mean I don't know is there something
> B No I'm not looking for anything. it's...
> L OK no I didn't know what
> B Just when you close what's closure for you that's all and that's what I'm asking. It's just basically when you start and when you finish
> L OK
> B For you.
> L Just but if I got pretty much the pace of the class so I if I see that this class is getting stuck on something I mean I'll be reviewing but if we're running a little bit ahead of schedule then I'll just throw more problems in so that they keep practicing because I know that they're going to need the practice I usually just end it with problems and tell them you got to do these problems by tomorrow (L 2.2.5, 170-184).

Notice how L attempts to find out if he has satisfied my needs and even though I assure him that I have no specific idea of how he should answer, he seems to need to say a bit more.

I think that there may have been evidence of corruptive reflexity in one case in particular. JO, I believe, selectively omitted information in the original three interviews and

that even in the follow-up was chary and not completely forthright. My attempts to deal with JO are discussed in a separate section.

Response bias.

In surveys this term is applied to how non-responses affect the survey outcomes. Non-response is not a problem with professors; they always give some answer. In my study, response bias is a problem of the participants not responding to the question's meaning and the researcher's intent. Some of the time when the responses do not relate to what the researcher is seeking it is due to the researcher's inappropriate expectations. For example, I expected that my question about books, media, and other influences would yield elegant discourse and have participants waxing on how a book or movie changed their lives. It did not happen.

Responses are sometimes an effort on the part of the participants to reshape the question for better comprehension or to better suit them. Sometimes the responses redesign the question into another question as what happened when I probed people about the teacher's role in society. Many of the participants clearly were much less concerned with the "big picture" of teachers and society and were much more concerned with how teacher and student roles function. Even when I repeatedly tried to bring the discussion back to the macrocosm, I was unsuccessful; that was just not the way some of the participants wanted to deal with the question. I even split the question into two separate questions, the personal role and the societal role, and yet, in some cases, I was unsuccessful still. This type of bias is part of the bane and charm of the in-depth interview and must be accepted.

The Pitfalls of Documents

One of the problems with documents is that they may be incomplete. In my research, I never found incomplete documents that I was not able to fill-in from some other sources. Sometimes it was necessary to combine three or four sources, such as with the

county demographic information. I needed to use four overlapping sources to collect all the necessary data.

There were data that I would like to have included but that were not routinely collected and, consequently, were not available. For example, I looked for statistics on the use of the CTD laboratories, but these data were not compiled. It was not a significant loss as these data were not crucial to the study.

There were documents that I would have liked to have seen but I was reluctant to request. I would have liked to have seen both the students' and the chairpersons' evaluations of the faculty involved in the study. These would have given me some insight into independent assessment of the participants' methods. I did not actively seek them because I strongly sensed that merely asking the participants would pinch the interview relationship and, as the interview relationship was of utmost importance, these data were not worth the risk. Perhaps, the evaluation data were legally accessible through the institution, but I believe it would have been unethical to have acquired them surreptitiously, without the participants' knowledge and approval. Though I think these documents might have enriched the study, I do not think that their absence detracts from it.

Sometimes researchers are blocked from accessing essential documents. This can occur for any number of reasons and it was a concern of mine. Since I began this study, the faculty at Miami-Dade Community College have unionized. I have been very active in the faculty union and I am on the contract negotiation team. It occurred to me that I might be blocked from access for political reasons. This never happened. There were difficulties locating documents or determining who could best direct me to them, but I was never denied access to any existing document that I sought. In fact, I received much friendly and willing support at every turn. I even asked administrators, who were sitting across the bargaining table from me, for help locating specific information and they were most generous and prompt in their support.

Document selection can be biased. Researchers might select and report only those documents, which support their position. In my situation, the documents I needed to use are not truly susceptible to such concerns. My major use of documents was for construction of the research context. Either the context was supportive of computer use or it was not. If the context was not supportive of computer use then the site was not appropriate for my study. I chose all the documents that were available and necessary to frame the study and illustrate the context.

Exceptional cases

> Implicit in most social scientific notions of case analysis is the idea that the objects of investigation are similar enough and separate enough to permit treating them as comparable instances of the same general phenomenon (Ragin, 1992, p. 1).

There were two extraordinary cases that I must report on separately. These cases were exceptional for very different reasons. One was intentionally exceptional and the other was unexpectedly so. Both are elaborated in detail below.

Exceptional case one, JA.

I chose to interview JA as an exceptional case. She has been involved with computers since the mid-1980s, when she began to work at Miami-Dade Community College. Though, perhaps, she was not the earliest of adopters, she has taken computers in teaching farther than anyone else at the institution. Her late start in computers might be due to the fact that just prior to beginning with Miami-Dade Community College she had spent seven years living and working in Venezuela.

According to Rogers, JA would be an innovator, one of the two-percenters. She is a very high-end user. She has computers at home and the office and uses them for class, office, and other professional work. When she writes, she writes all her drafts on the computer. She keeps her calendar and agenda on the computer, regularly uses e-mail for communication, writes her own software, and uses computers in teaching. Profiling JA, an

innovator, who is at the opposite end of the range of those I am studying, gives me a contrasting picture for comparison. While the backgrounds of the participants add one dimension, the opposite profile adds another. JA's profile helps ground me and the study, if not in a theoretical sense, then in a practical sense. I refer to JA throughout the analysis. She is an excellent contrast to the other participants. I am going to let JA's words help illustrate her.

B Can you describe how you came to use computers in your teaching? What thinking was involved in your decision to come to use computers?

JA Well when I was in Venezuela there was no technology available. There was one overhead projector for the whole university where I taught, at the Central University. I loved, love technology but after seven years of that I was pretty starved. So when we came back to the United States, I learned how to use technology and word processing and found it easy. Then when I became a teacher I found that my productivity increased every time I learned something new to do on the computer. I can do more and I thought that this is something that everyone should know. The more I thought about it the more I thought that ESL is the one area where you have a goal to teach people a language but you can use any content, any content that you want while you're teaching them the mechanics of the language. So that content could include technology. Not only the content but how you teach it is totally flexible. So why not use content that is going to be meaningful to them, that they can use in the future and teach them in a way that they're going to come away, not only with the language but with skills that they could use to be marketable. That's the end product. In the beginning, it was a growth process. Though I tried some software programs with groups of students and noticed that they liked it. That got boring because it was drill and kill. So I started experimenting, putting them in pairs in front of a computer with drill and kill and that worked better because it was a little collaboration and some more use of the English language while they were trying to do a task. That's really where this whole idea came from. When I saw what happened when you put two computers, two students or three students together on one computer, give them a task and watch how they use the language to communicate while they're trying to do the task that they're assigned to do which is also the language that their using that they're trying to learn. So you hit them twice with the language but they're also learning how to use a tool to achieve their goal while communicating in the language. You have oral, reading, writing English and they're learning a skill because they have to manipulate the technology to accomplish what they're doing. I did that for about two or three years, just that. Then I realized that I really hated the software so I started writing my own software. That was even more exciting because when the students saw that the teacher is the one who wrote the software, they're really polite; so they tried even harder. With that motivation they seem to do more or go farther, faster. That was kind of cool. Then as the programs became more sophisticated and

> easier to use with Windows instead of DOS, and Macintosh of course which has always been simple for students to pick up and use without a lot of training, I started conducting a lot of classes in labs. Not only with drill and kill software but using word processing in my speech classes. I would use Power Point; teach them to use Power Point; teach them to do research in the Internet; teach them to gather their information and put it in a Power Point presentation and then present the speech to the class using the Carnegie Melon templates that are within Power Point. They have maybe, I think, 15 templates of what a good speech is for when you're doing an introduction or a presentation or selling a point. So, they're learning all of these skills while using technology while working. Anyway, it's a win-win situation. They like that. I still have those presentations. Lets see. The other things with technology are helping the student what was the question I got off track? (JA 1.2.6, 206-251).

I think that JA's words speak volumes about the way she relates to computers. All of these answers just spilled out of her in one long sentence that I have edited for better readability. I am going to let her continue. At this point, I directed her back to the question.

> B How did you come to use computers in your teaching?
> JA Mainly I kept with it. Also, because of the reaction of students, they loved it. And it was the highlight of most of my [student] evaluations. They loved using the technology and doing the Internet. They thought that they were learning something that they could use when they continued their education. So. I don't do something more than twice if students don't react well and students have always reacted well to that. I had one case where I had an older student who, Emelina, I still remember Emelina, hated the computer. Didn't want to turn it on. Cried when we went in and used them. Failed the class but not because of the computers but because she was really misplaced in the class. And she insisted on taking my class the next semester. Bought a computer. Did all the tutorials and now she is a secretary somewhere. So there aren't too many cases where you have something that students can hate and then all of a sudden they realize, wait a minute this maybe the way of the future. It's easy to convince students when everything they see in life today is technology. Then if they see that they're getting something besides what they signed up for, they're happy (JA 1.2.8, 254-266).

JA uses the computer in all her classes. She develops her own software and wrote all software that accompanies the two textbooks she has written and published. She works with other teachers and, while she has maintained her home discipline as a base, she has worked with teachers at Miami-Dade and outside through CTD and independently. She teaches courses ranging from Internet browsing, Web page creation, to word processing, authoring programs (e.g., HyperCard, HyperStudio), presentation programs (e.g.,

PowerPoint). She is a masterful teacher and a master of the computer. I know from personal experience that she thinks and works extremely fast and expects co-workers to keep up. She is, in the argot of the day, a workaholic; she does more than her share on any project.

JA adapts quickly to new situations and problems. She picks up authoring languages the same way she has picked up spoken languages; she is a polyglot. She views problems that come up in using computers in teaching quite differently from the others. While they see the real and potential problems as inhibiting, JA sees them as par for the course and integrates the hazards into the lesson.

JA does not see the computer interfering in the student-teacher relationship. She sees the computer-teacher-student as a role. She has integrated the machine into the relationship and is not between the students and her. The computer is a tool but, for JA, it is an "essential tool"; so, when there are problems with students and the computer, she is not concerned. She glosses over student inhibitions, see the above quote and notice this one:

> JA They always had to write in class on paper for one of their graded tests because some students were intimidated by the technology of typing (JA 1.2.5 , 160-163).

She is convinced that the advantages of the computer are by far more significant than the disadvantages. JA is as passionate about teaching as are her non-adopting colleagues.

> JA I really love to teach. You got to find one thing in your life that you love to do and you should stick with it.
> B What makes you say you love to teach?
> JA It's just when I think about it...
> B You had a thought there and it went through you...
> JA No it's just the feeling I that... I remember the classroom and I remember how I feel in it and it's where I feel the most comfortable. I have teenagers at home and I feel very accepted in a classroom and respected (JA 2.3.9, 288-297).

In spite of or perhaps because of the fact that her class is in a computer laboratory and that she uses the computer herself as a presentation device, there is a lot of

collaboration among the students. The students use computers extensively to produce their own work, such as written assignments and as PowerPoint presentations. JA makes less reference to CAI than to other forms of computer use. She shares the participants' view that most CAI software is worthless, calling it, "drill and kill;" yet, she is adamant that well done software, coordinated to the courses, is powerful and functional. Furthermore, she says that students like to see their teacher's name on the software and it stimulates them to work hard. JA's classes are fundamentally differently structured than the other participants'. There is high student involvement in the learning process and much less teacher centered activity. JA's classes are much more attuned to constructivist's ideas than didactic notions.

JA has been high profile in her field. She has attended and presented at many conferences. She is the past president of her state professional organization, was editor of its newsletter, and currently sits on the advisory council for the graduate program in her discipline at one of the local universities. She has experience with many other cultures. She married cross culturally and raised her children biculturally. She speaks French, German, Greek, Italian, and is certified in Spanish and English. She was among the first at the college to use a presentation station with a computer and a television as the audience view screen; the first to design software with HyperCard; the first to develop and use instructional computing. So, while microcomputers were at Miami Dade before JA came, she moved them out of the limiting, discipline specific, proprietary laboratories, and directly into the classroom and her teaching.

When asked what influences her to change, she first mentions her attendance at professional conferences and contact with colleagues but later and throughout the interviews, the more recurrent manner of change for her is experimentation.

B When you started to make a choice to start doing this you were experimenting. And basically you had no real conviction or knowledge that it was going to work.
JA Right.

B And when you approached to see how it would work, then you got ...
JA At first
B And you used the feedback that you were getting through the process...
JA to see what worked and what didn't work (JA 1.2.8 , 267-270).

JA has been so innovative that more than any other form of initiating change, her own motivation to try something radically new has been primary and, as she lacks any trepidation, she does just that.

With all of her belief in the computers, she is not without certain reservations. She criticizes CAI software and warns that Internet (CBI) based courses by definition and design lack social interaction that other settings have; yet, she differs from the other participants. She sees these as hurdles to overcome, not as detours that lead back to traditional instruction.

> JA I wasn't afraid of technology I wasn't afraid. I wasn't afraid in a classroom to have the computers crash and to not know what I was doing in front of a group of students and I always warned them this is the first time with this program. Things are going to happen. We're going to let it happen and then we're going to take it from here. It's one of the fears I found with teachers. They are they are afraid to go into a classroom because they're afraid of something that might happen and make them look bad in front of the class and I think that's the core of fear you have to get over that you have to accept that technology sometimes doesn't work. The only way to accept that is to let it happen a few times and then its OK. Then students realize it too (JA 1.2.8, 279-286).

JA is so convinced of the efficacy of the computer in teaching that she is unaware of the research regarding its effectiveness, as are the primary participants. When I question her about it, she admits to knowing more about research in distance education than the computer in the classroom.

> JA Computers in teaching. Actually most of the things I have are on distance education. I haven't read a lot except the things that I've been involved in personally over the years and I've been out the research part of it, reading, because I see how it's working for me (JA 1.2.10, 333-336).

She is open to the computer being no more effective than traditional modes but is convinced that the supplemental learning is useful and that the way it facilitates her teaching improves her teaching and tips the balance in favor of using the computer.

At this stage in her career there is nothing that will dissuade JA from using the computer in her classes. Not only is she absolutely certain of the computer's efficacy but I think that she, as JC says, "just likes them." In fact, when I asked her how she felt when she thinks about computers, JA's answer was, "excited." Whereas the participants dislike them, JA loves them. Whereas the participants have doubts, JA has faith. And that makes all the difference.

Exceptional case two.

JA was an exceptional case by design, while JO came to be exceptional through the process. JO initially self-identified as fitting the profile of a nonuser; however during the second interview he made statements, which began to create significant doubt about his qualifications for the profile. It was this doubt that joined with my developing biases (discussed in the role of the researcher section) that caused me consternation and necessitated a post-interview follow-up. As a consequence of this reconfirmation, I went through his responses again to verify that I was correct to accept him into the participant data analysis and to review and re-analyze the data. It is necessary to profile him, as I had no similar problem with the other participants. This profile should complement the discussion of him in the section about my biases.

The JO grew up in a very poor region of the South. He has a heavy accent, speech patterns, idioms, and verbal and nonverbal communication that are almost dialectical. There were times I asked him to repeat words and then I often still had to ask him what they meant, such as in the following exchange:

JO So it was just you know it was just it was just a life style it was just farming. My father didn't like that because he didn't really like farming anyway. He just had to. He was a xxxxnecker

B A what?

JO A roughnecker
B a roughnecker
JO he would worked in the oil field and
B Ahhhh (JO 1.1.1, 16-23).

His enunciation was, at times, to my ear, so indistinct that it sounded like mumbling. He spoke very fast, stuttering, repeating words, and with many false starts. I know these are not speech pathology but indicative of a regional speaking style. I spent two years in undergraduate school in central Georgia and I recall that some of the "farm boys" spoke similarly. Since then, I have grown unaccustomed to these patterns and I found it difficult to decipher.

JO describes his background this way:

> JO I grew up in the country in north east X [a southern state]. ...all I did was work on the farm during this time it was an extremely primitive life without cars and electricity and water in the house and stuff like that and after I finished high school, I went to college expecting to be a farmer, that's what everybody does that's just the way it was. And the high school was a rural a rural place. There was 48 people in my graduating class and so everybody expected to be a farmer. That's just the way it was. None of us did have cars. We just had first we had mules and horses and later in high school we finally got an old truck. So it was just you know it was just it was just a life style it was just farming. My father didn't like that because he didn't really like farming anyway. (JO 1.1.1, 9-17).

JO loves teaching at the community college and loves, as he puts it, "academia." He is a conservative, neatly attired person, who believes that his manner of dress is an important part of his role.

> JO And I am not a majority at all but I think that an instructor should wear a tie because that that puts you above those students and so they have something to look for to move up for. Some people we are good friends that walk they look like a sleaze ball. They walk in with almost nothing on. And see I personally don't think it's right. I am not sure it is right or wrong but to me it's wrong because I think the students the students need to hold to be above them to keep pulling them upwards to improve and I think that stuff is important (JO 1.1.18, 619-624).

Much of his background influences his teaching. Education was a way to get off the farm. He sought to find a way to not follow after his father in agriculture. An early brush with death moved him more deeply into sciences. He sees his teaching of science courses

as a way to get back at death that twice nearly took him. Like all of the participants, he immensely loves what he does and does not think about leaving his position. He worked for Miami-Dade Community College in the late 1960s but had to leave it for personal reasons. It took him almost two decades but finally, he got back to the college and he has no intention of leaving it. My question with the job interview format fell apart with him, as he could not imagine looking for another job other than the exact one he currently holds.

I began to have some doubts about JO's relationship to computers in interview two. When he responds to my statement about bias and lack of bias in regards to computers in teaching, he says:

> JO I think we all have to learn to do it [use the computer.] I think it's mandatory. The reason it's mandatory is that all are involved in [science] and you can't get a job now without being ... [computer literate.] We also use [the computer] now, for identification of pathogenic bacteria. ... so even though I don't use it as much as I'd like to people gonna have to use them (JO 2.2.1, 23-29).

Later, while answering a question about his contact with computers, he says:

> JO Oh yeah I have taken several classes at Miami-Dade. Uh uh yeah I am involved with a lot of it because I xxxx got a thing I do off campus. I sell computers. I xxxx computer equipment. so so (JO 2.2.28, 285-287).

If the above is true, it greatly discolors the following comments about CTD workshops he makes in the following exchange:

> B How do you see the support in terms of training and teaching here on campus?
> JO I think I am too biased.
> B What's your bias?
> JO Well (pause) uh (pause) if you go off campus it's better.
> B Off campus being you mean to another institution?
> JO Or that or that or place where they sell the stuff. You know they have little workshops. Uh a lot of my idea now I buy them xxxx I go through them myself and do them as I go. It's uh. Our workshops. I have gone to several of them uh in the the (hits hand on table) (JO 2.2.8, 288-296).

By this time, I was not listening attentively and I was feeling disillusioned. My concentration had diminished some and I was thinking about whether to end the interview

process or to continue. I chose to continue. However, I later read his transcripts with a somewhat jaundiced eye. My journal notes say that I "should have pushed him harder;" so, after much thought and consultation with two people from my research committee, I decided to confront him with the inconsistencies and see what he said.

I called JO and asked if I could come by his office. We made an appointment for one afternoon and I met him. I told him that I needed to clarify some of the things that came up while I was reviewing his transcripts. I noticed that when I began to question the points, he blinked, sat back in his chair, and seemed genuinely taken aback by the suggestions of inconsistency or lack of clarity. The truth, even as he sees it, is a hard nut to crack, as can be seen in the following:

B I just have two questions. They came up. I was reading over your transcripts. There was one place there that sounded like you said that you sell computers?
JO No.
B No. OK.
JO Well
B then I misheard
JO Well, (pause) I do but only just as a just as a secondary activity.
B Well that's what
JO I have a I have a uhm computer store on the Internet and that's just one of thousands of things.
B (laughs) OK
JO It's this whole store so so it's really, it's just, I don't do any, I haven't sold one, I don't even try.
B Uh huh. OK. So you do then you are selling them though but you don't warehouse them or what?
JO I don't even sell them. I don't warehouse any of it. I do it all by Internet.
B So you just connect people
JO Right. But I don't do it with computers at all yet.
B Oh you don't do it with computers.
JO I don't do it with computers at all.
B Oh OK
JO It's on my store. I don't do any with it because it hasn't uh developed enough to uh pursue it.
B OK. So you have an on-line store? That's cool.
JO Oh yeah oh yeah
B What are you selling in it?
JO Everything.
B (laughs)
JO well well uh
B What's the name of it?

JO Uh (pauses) the [Name of Company]
B [Name of Company]
JO Uh huh

Because of his equivocation and the fact the e-store is involved in computers and training I had to reassess him with yet another slant and with a large grain of salt. I decided to strike his critical comments about CTD from the analysis. Furthermore, I decided to use his comments about the research questions only if another person said essentially the same idea. Yet, notice in the following exchange how firmly he clings to his non-use position.

B OK. The other question I had was that I was looking for, people who don't use computers in teaching and that was the question that I had asked initially before you came to the interview.
JO uh huh. I do not use it except for just the lab
B OK
JO one of the little projects
B So you separate the teaching from the lab?
JO Oh yeah yeah. Well xxx in the lecture I don't use it at all.
B But in your mind lab is then what would you define it as
JO xxxx
B maybe it's not teaching
JO They're really two different courses. They're really two different classes
B OK
JO Completely
B But would you call the lab experience that you do teaching?
JO Yeah (hesitantly) oh yeah
B Yeah?
JO Yeah. Uh huh yeah
B OK
JO uh (clears throat)
B then when I initially presented you with the profile you were thinking in terms of only the lecture
JO Yeah I wasn't really thinking about using that computer I mean xxx because we use it for one project we're working on.
B OK
JO As the lab book has emphasized uh two things it does only one exercise one of those is to uh xxx the computer for about 15 minutes 20 minutes that's all that they do.
B OK
JO uh
B and is that the one when you're trying to figure out what bacteria is
JO Right right right. They've already done that done that two different ways before that
B I remember you saying that
JO And that was just a third way to confirm that it's true. So that's the only way we use it.
B How else in the lab might they might be used?
JO That's all. That's all we have.

B OK.
JO That's all we use them for.
B Thank you.
JO We just use it on the inter... I am not sure that tell do that much longer because
B You don't have a lab any more
JO Well I don't. I do not.

As hard as the nut was to crack, the meat was just as tough. This review brought forward new perspectives and concerns. I had overlooked this comment from the interviews:

> JO I don't even think it should be there. I am a strong believer that it [the computer] shouldn't really be there. That's why I don't use it very much at all. I do the lab a certain time because I want them to know that in some hospitals they do in fact use that to identify a pathogen but I mean them to learn how to do it physically do that. I want them to have some blood and guts. I want them to have some sweat (JO 2.2.12, 404-408).

He has strong opinions about if the computer is going to be used when it should be introduced. He thinks that students must learn the fundamentals first. He is an ascriber to the "lights out" problem. He is not alone in this sentiment. At least three others voiced virtually the same opinions.

When he assesses the interview process he mentions the computers. He says,

> JO Because if you sit and talk about things a lot of things you can change your mind about but not if it's a confrontation you can't. It's always uh now I really have in the last two or three years the computers got so involved I really hadn't thought of it the way you, the way we [he and I] was talking about it. We [all at the college] don't talk about it that way. We are just following the tide. But it's it's a lot of it's really not good. A lot of that stuff is really not good a lot of that stuff is not the best at Miami-Dade, at this point at the elementary level (JO 3.3.10-11, 377-380).

Seidman (1998) warns interviewers not to push a reluctant prospect into participating and to not accept a very eager prospective participant. JO's eagerness did not show up until the interviews were well underway and there was nothing to do but push on. I did not fully comprehend the complexity of the problem he would become until after I had begun the analysis. So, after much wrestling with my biases and difficulties, I came to the conclusion that not all data would be clear and consistent, or that I would easily

comprehend them, as Wolcott (1994), among others, points out. Wolcott (1994) suggests that worrisome data not only cannot be overlooked but also are often worth the effort to be untangled, if nothing else for our own edification. JO does, in fact, lend richness to the data and the study but his richness needs to be cut a bit with reasoned care. His very conservative attitudes and traditionalism are pure and serve as a light on others' statements, even though he could not shine alone. In the final analysis (intended), it is good that I was able to include him in some way.

Chapter IV

Report

> The critical task in qualitative research is not to accumulate all the data you can, but to "can" (i.e., get rid of) most of the data you accumulate (Wolcott 1994 p. 35).

The report is based on the initial analysis. It covers the issues that emerge from the data and looks at the information in the contexts of the participants and in light of the literature. In order to compete a picture, it is necessary to have the background and context. The larger context of location, college, campus, physical descriptions of the work area, and the institutional, organizational context of the services and support for computer use are described in another section. What is described in the following section is the personal background of the participants, perceptions they have about students, themselves, teaching, support, services, institutional attitude, pressures, methods, and their general receptivity to change. These will complete the foundations for the discussion, which follows this section, about the participants' perceptions in regard to computer use in teaching.

Background and Contextual Issues

As stated in the procedure section, I selected all of the participants purposely keeping certain criteria in mind that came from the literature and also to reflect the diversity of the institution. There are commonalties among the participants that are due to the nature of the institution; for example, all must have a minimum of a master's and either 18 credits in the field or significant related experience (Southern Association of Colleges and Schools requirements, Miami Dade Community College job requirements) in order to hold their positions. All of the participants have significant formal education beyond the minimum; two have a doctorate; one has a second masters; the other six have additional gradu[illegible] credits beyond the masters. Three participants are in a doctoral program. This advancement beyond required minimums indicates some interest in continued professional growth. This view is affected slightly by the fact that until eight years ago, the institution's policy for

advancement required additional credit courses to move up in rank. However, that policy was changed in 1991, and yet many of the participants are currently taking courses. In the case of R, the 18 credits were taken to be qualified to teach another content area. I will discuss this tendency toward professional growth and its relationship to change later.

The influences that most of the participants cited as bearing on them as a teacher came from schools. More often than not universities and graduate schools were cited. In the case of D, she traced her influences further back to elementary and junior high. Most of the participants were aware of choosing to teach and in particular choosing to teach in a community college because of its emphasis on teaching over research. There seemed to be a feeling of a calling to teach and many express thoughts similar to C "Yet I don't think I ever seriously consider doing anything but being a teacher" (C 1.1.18, 602-3). C and several others also stated that they had decided when they were very young that they were going to be teachers or in education somehow. Their choices of content areas are highly personalized. JO, for example, teaches sciences connected because he had a near death experience and he sees his work in his field, in part, as "fighting death" (JO 1.1. 15 482-483). D's struggle against racism, that began when she was one of the first students to integrate her junior high school, moved her towards counseling and later showed up in her curricular emphasis on diversity. Several of the participants related that they come from economically disadvantaged backgrounds and that their views of education were strongly influenced to see education as not only a vehicle for a change in their own lives but as a concrete example of how it is an impact on the lives of their students who are also in many cases disadvantaged.

Cosmopoliteness.

Cosmopoliteness, as defined by Rogers (1962, p. 17) "is the degree to which and individual's orientation is external to a particular social system." Cosmopolite people tend to travel more and interact more with other cultures than "localite" people. They are more

open to ideas from others. Cosmopoliteness is positively linked to innovativeness. So I looked for indicators of cosmopoliteness and localiteness.

As a whole, the participants have a great deal of experience with other cultures. Most have either had experiences living and working abroad, that is, beyond travel, or have immigrated to the United States. This also indicates openness to new experiences and change and demonstrates direct awareness of different cultures. These experiences indirectly shaped their teaching but in two cases, C and R, it had direct impact. Both C and R were in Peace Corps as teachers and experienced the Peace Corps teacher-training program. Both of these participants cited the Peace Corps as having a direct impact on their teaching. Furthermore, C taught in Germany through a Fulbright teaching fellowship. These experiences with other peoples and other cultures would indicate that the group of participants is fairly cosmopolite.

On the other hand, there are indicators that they are very localite. Only two of the participants went to many professional conferences. Most attended local workshops and other professional encounters including collegial dialogs and departmental meetings. The lack of professional conference attendance, particularly in the last five years, has been severely restricted by college administration's shift in priorities for travel (internal MDCC memorandum). In the past, attendance at professional conferences received considerable travel money and a priority for attendance was evident in travel committees' decisions. Presenting at conferences was encouraged and given even higher priority than simple attendance. Policy shifted and faculty attendance dropped way down on the list of priorities and emphasis is now on travel for "business of the College" which is defined as administrative business (internal MDCC document). So, to at least some extent, the participants' lack of attendance at professional conferences may be due to the unavailability of financial support and lack of institutional encouragement.

Accessibility, support, and familiarity.

Accessibility (Rogers, 1995), peer support (Burkhardt, 1994), familiarity (Sacks, Bellismo, and Mergendoller, 1993) and institutional support in the form of training, hardware and software, and attitude are other contextual factors that need to be considered. (McLaughlin, 1976; Berman and McLaughlin, 1976). I looked at these factors through the eyes of the participants and through the use of documents and contact with other college personnel. I did this more to be able to have a broader picture of the context than to verify what participants said.

Support for the maintenance of the hardware, provided by Computer Network Services (CNS) was difficult for the participants to rate, as only JA has had significant encounters with CNS. Most of the participants said they really could not say much about hardware support because they had had little experience with it. Their computers are not quite a year old. Training support is another matter.

According to Traci Henderson, Director of Computer Network Services, every faculty member at Kendall campus has been provided a personal computer of his or her choice (Traci Henderson, Director CNS, personal communication, 1999). They could choose a laptop or desktop, IBM or Apple. They also received software: PowerPoint, Excel, Microsoft Office 97, and Netscape. In addition, they were provided with e-mail, and Internet access. According to Marie Nock, Director of the Kendall Center for Training and Development, the attending training that was offered to faculty who received new personal computers has brought the original 1994 figure of 91 percent computer literacy (CTD master plan document 1994) to an estimated level of 99 percent (Marie Nock, Director CTD, personal communication, 1999).

The perception of all of the participants is that most of the workshops offered by CTD are technology, specifically computer, related, and their perceptions are accurate. According to the CTD 1997-98 annual report of the 388 workshops offered, 278 or 72% were "technology training programs." The workshops most mentioned by participants are

PowerPoint, and basic computer skills. The report lists PowerPoint first but there are a significant number aimed at Internet skills; e.g., Web Basics Netscape: creating and using bookmarks, Web searching (CTD document, 1998). In addition, two proprietary laboratories associated with specific departments, there are two electronic classrooms that are under CTD domain. The laboratories are used for internal training and workshops but also are open and staffed 20 hours per week for faculty and staff walk-in's and scheduled tutorials. They are closed to students, except for occasionally scheduled classes. This may be important to some faculty as they might be concerned about students observing them. However, none (except JA, the innovator) of the participants was aware of the open laboratories and they did not know about the availability of individual tutorials.

All of the participants were aware of the workshops and notifications they obtain through inter-office mail. Furthermore, all had taken part in at least one CTD computer technology workshop at some time. When asked about attending more CTD workshops, the participants had numerous reasons for not wanting to attend more. They found the times and locations inconvenient. The times often conflicted with classes and locations were often at another campus, which everyone found to be too inconvenient. The content of the workshops was unappealing. Participants wanted to see colleagues in their content areas demonstrate effective use of the technology. The workshops offered were not content specific enough for their needs; they were not interested in Web Basics, PowerPoint, computer literacy basics, and word processing. CTD documents confirm that content specific workshops are not offered. D expresses preferences based on her learning style. D says, "I have found that I tend to do better in a one-to-one situation. I know my learning style" (D 2.2.16, 542-3). D is not aware of the tutorials and open laboratories that would accommodate her one-to-one needs.

Innovation must be accessible for adoption. It is only logical that there must be an ability to adopt innovation whether or not there is a willingness to do so (Ram, 1987).

Furthermore, potential adopters must be able not only to observe it in use but also be able to implement it if they so wish (Rogers, 1995). They must also have a certain level of familiarity with the innovation (Arthur and Hart, 1998 in Bill). On the individual level, it is impossible to deny that there is significant accessibility to computers since as the spring of 1998 there has been a personal computer on every faculty desk at the Kendall campus. So the question of accessibility turns to classroom use. Opinions varied some on this point. Most of the participants believe there are not enough computers for each student in the class to have one; i.e., there are not enough electronic classrooms available. Some felt the possibility of bringing a computer to the class for demonstrations and presentations was cumbersome, unreliable, and not sufficiently supported in terms of quantity of hardware. Others seem to think that if they really wanted to use computers there is sufficient access. None of the participants have actually tried to use computers in the classroom so they have no experiential knowledge one way or another.

As described in the setting section, there are proprietary computer laboratories in many locations of the campus. Some academic programs and courses specify computer use and specific programs that are often associated with the course text. Other laboratories are open laboratories and allow for unscheduled student access to CAI, word processing, and the Internet. Though all of the participants said they were aware of the laboratories, none of them used the laboratories' resources prescriptively. R is unfamiliar with programs in the ESL laboratory. JC believes that students use the videos associated with her mathematics textbooks more than the computers. M, although she takes her students to the laboratory, does not assign work and says outright that she does not integrate the computers into her curriculum. She is essentially supervising discipline and answering questions about content while the laboratory personnel support the software and hardware used by the students.

All things considered, I do not think accessibility is a significant issue in their non-adoption, as we will see later when other reasons are explored. Again, availability, at least for the individual also makes a non-issue of computer literacy. All of the participants are aware of computers, have basic computer literacy skills, and have a computer on the desk. All but two use their office computer for word processing. JC and N still use secretaries for their word processing needs. So the level of familiarity and accessibility does not seem to work against adoption and use.

Pressure.

The participants' perceptions of the institution's attitude toward computer use vary little. All the participants see the trend is moving toward computer use but none of them express significant feelings of institutional pressure, in any direct sense. R and M say, "they're bought, then use them," may drive some pressure to adopt. While there is as yet no such demand on faculty to use computers, a number of participants anticipate future pressure. They essentially feel that the institution is supportive, desires an increased use, but is not pushing them to implement.

In the science and math areas, both L and JO mentioned debates over the adoption of computers that have occurred in their departments. However, both seem to feel that there is much more discussion over issues in the department that are not related to computers and that there is not sufficient consensus to create pressure to adopt computers outside of those that are in the proprietary laboratories. None the other participants mentioned that their departments were discussing computers for use in teaching, other than in the laboratories.

It appears that even though there might be some institutional movement towards pressuring faculty to use computers in teaching (MDCC administrative contract proposal, 1999), and that there is societal pressure building both inside and outside the campus, it is not as yet an irresistible pressure. Thus, it is not likely that, at this point, it greatly influences the participants. Also if there were pressure it clearly would be towards adoption

and would not positively contribute much towards the choice not to adopt. On the other hand, if there were great perceived pressure to adopt and the participants were intractably aligned with non-adoption, we might conceive how there could be impact on non-adoption in the sense that convictions regarding the non-adoption would need to be stronger than in a no pressure situation. However, given that there is not much perception of pressure to adopt, there is not much likelihood that non-adoption is a reactive decision against the pressure.

The research on Instructional Television (ITV) indicates that early tenure was a factor in resistance to ITV. Due to pressures concerning tenure, new faculty were not willing to undertake the risk associated with ITV (Evans, 1970). In no case was this mentioned by the participants in my study. On the contrary, the most recent of the participants to be hired were the most interested in trying to use computers in teaching. In addition, the trend of the institution is toward computer use as is evidenced by the number of technology related workshops offered by CTD (internal CTD document, 1998) and by the current administration contract proposal for collective bargaining (MDCC contract proposal, 1999). So, if anything that would increase pressure to adopt in regards to tenure and promotion.

General receptivity to change.

"I am willing to accept and change whatever it is that I feel is necessary to make myself a better teacher" (R 3.3.6, 187-8). This is part of R's response to the probe, "When you look at things and consider changing things in your teaching, what are the things that influence you to do that?" His responses are indicative of all the participants' openness to consideration of change. Each of the participants have explicit examples of changes they have made in their teaching. Each one clearly noted that trial and error is always at work and that if a particular lesson, approach, or explanation is failing to achieve the objective it is abandoned, at least for that day, and a new approach is sought and

affected. All the participants say they are cognizant of their students' grasp of the objectives and that they use a variety of informal methods to ascertain the effectiveness of the lesson. The informal methods range from the "glassy-eyed" method (referring to the sort of glazed-over look students' eyes get when they are lost and have drifted off into their reverie) and to other subtle body language, to a blatant lack of response to probing questions from the professor. There are more formal, non-test, checks, as exemplified by "cooperative quizzes" that L uses, in which students work together on "quizzes." This type of check of allows L to hear their meta-cognition as well as the outcomes. M and D use techniques that were introduced by Patricia Cross during her residence at the college. One such technique is quick responses to leading phrases that must be completed; phrases such as, "Today I learned..." or "I feel...." D also uses something she calls a "one-minute journal" in which students write for one minute at the end of the class. They write their thoughts and feelings about what has happened during the class. These teachers also use their own thoughts and feelings about the class as to whether to continue or to change it. R says, "I do not want to be bored" (R 2.2.3, 79) and this indicates that he has respect for his own interest as an indicator, or source of feedback, about the successfulness of the lesson.

Following this same thread, N's comments are interesting. She mentions becoming acutely aware of her self-reflection, while teaching in a program to train teachers.

> N I had to explain not the program but what I was doing in the classroom. I had to explain to them in order for them to learn what I was doing so I really had to stop and think. "What am I doing and why am I doing this?" Although I had done that kind of thinking on my own too...
> B Sort of the self reflection?
> N Right

This exchange not only shows what N did in the teacher-training program; it is what she frequently describes as part of her process of updating her teaching. Others expressed similar thoughts about their work and would make similar changes. These changes occurred during the lesson as a response to the formal student feedback mentioned above or

in more a profound reflective period in response to the end of class feedback or some internal angst that urged rethinking of the lesson.

Miami-Dade Community College requires a student evaluation every semester. It is notable and interesting that not one of the participants mentioned the formal student evaluation at all. The fact that it might not have been mentioned may be due to the fact that participants are very narrowly focused on very specific objectives, factoring polynomials, freedom viewed through Marxism, the simple past tense irregular verb, and the student feedback is too general for any meaningful information leading to specific change. While not a direct response to student evaluations of faculty, M's comments concerning one student's feedback to her elucidate this point:

> M I don't think I need to change the essence of who I am, who I have become, just because my student says I don't smile; however, "we don't feel comfortable in your class to the point where we can't take the risk in asking questions," then that becomes an important something I need to address (M 3.3.7, 234-237).

A little later she says:

> M unfortunately some people wait until they are anonymous [such as the student evaluation] and then they say it and it is very hard to deal with the because I don't know the context. It's at times decontextualized and I can't deal with it or it is so negative that I can't do anything with it. Things like, " you're the worst teacher I've ever had in my life. I never learned anything," is not understandable to me (M 3.3.7, 241-245).

What these kinds of comments indicate is that feedback and critique is not avoided rather that specificity is desired. The student evaluations are more similar to "like/don't like the teacher" than the kind of specific feedback M and the others seek.

Methods and change.

The request to relate a typical class gave the opportunity to participants to describe their methods of teaching without having to name the pedagogic underpinnings. It is evident that they are, creative, flexible, and adaptive. It is also clear that their primary concerns are for the students' successful acquisition of the course objectives. Methods extend beyond classroom into behavior designed to increase retention and attendance,

informal psychological counseling and techniques for students to increase their chances for academic success. C calls his students at home when they have been excessively absent. There was a similar program that existed and died before C's tenure began, but he has independently arrived at the same idea and implements it individually.

All of the participants use collaborative learning techniques in one form or another, whether it is allowing time for groups to work together or it is required by the task, such as L 's cooperative quizzes or D's discussion groups. Many are searching for more ways to incorporate cooperative behavior into their methods. D and C have integrated service learning into their courses. Service learning is a method in which students must do voluntary or minimum pay service in the community that relates to course objectives. D has students in her psychology courses counseling at-risk students in local high schools. Each participant has examples of innovative ideas that facilitate better learning. Two of the participants have written textbooks in their fields, work that reflects their teaching styles. Three of them have had major experiences in program and course development that have involved much methodological consideration.

The fact that these teachers view their roles as an obligation to impart knowledge and skill and that the successful accomplishment of this obligation is achieved through change and adaptation reflects on their general openness to new methods. Several outrightly state their commitment to change. C says, "Constant improvement is my motto." (C 2.2.6, 200). While talking about her perception of students, D states her beliefs about change, "... learning information just to spit it back and unfortunately when you get students at the college-level and that basically is what their perception of education has been, in their twelve years. It's very difficult to change that but it can be changed." L related a problem he was having teaching factoring polynomials and the block that students were having with his method. He went to a friend in the math laboratory and explained his difficulty. The friend showed him a completely different approach that he tried and

successfully used. He says, "I've change some of my teaching styles from the things that other colleagues have told me informally. Now one of the things, factoring polynomials, is one of those difficult topics for students to comprehend in algebra class and I've tried a different approach. I learned it one way and I was teaching it for many years the way I learned it, which is I think the way we usually start teaching things. Then I learned about this other method and ever since then I've been doing it, I've found they've been learning it much better. Hey isn't that it; if you hear something, try it. If it doesn't work, then try something else." (L. 2.2.15-16, 518-25).

These examples not only illustrate a certain to willingness to try out new ideas and attempt to find new techniques for unworkable methods, but also they demonstrate a commitment to change for the sake of students' learning. There is too, in the "if it works" attitude, a clear pragmatism. This is demonstrated by the use of a variety of methods, by their adoption of new ideas, by their commitment to find some method that works. When D is describing herself, she says "I would say adventurous because I am willing to try different things in the classroom and I'm always looking for something like a new, well like with my groups, new exercises, new ways to organize it and I would say adventurous. Willing to take risks..." (D 3.3.10, 346-48). This pragmatism is explored more in a later section but at this juncture it is important that a basic receptivity to change is apparent in the contextual background of the participants.

While these methodological innovations, adaptations, and adjustments indicate an openness to change, it is interesting to note that the examples, with the exception perhaps of textbooks, are all on a microcosmic level; that is to say, the change generally relates to a lesson, an objective, or a particular set of teaching points. There is not evidence of neither a major curricular nor methodological shift, what Markee (1997) calls a "complex, multidimensional phenomenon." Life laboratories, process syllabi, discovery method, electronic classrooms, are some examples of major curricular/methodological shifts that

demand overall changes in thinking and behavior. In two cases, L and N, there were outright rejections of the complete adoption of a methodology. L rejected the discovery method in math and N has selected only parts of the functional/notional method for use in her ESL teaching. Computers in teaching may be seen as tools on the microcosmic level or as a complex multidimensional phenomenon.

On the face of it, someone who in general is open to change commonsense would tell us would probably be open to a specific change. This may not be true. "Receptivity might be viewed as an organizational member's internal orientation toward the proposed change which is not necessarily indicative of how the individual will actually respond to the implementation of an innovation. Resistance, on the other hand might describe one's external orientation toward planned organizational change: the action(s) one embraces to stop, delay or otherwise undermine the successful implementation of an innovation" (Clark, 1996). Though Clark is writing about the individual's response to organizational implementation of innovation, it is nevertheless possible that there is such a gap between an individual's receptivity to change and individual's personal implementation of an innovation as is the case here where the participants seem to be generally receptive to change and yet have chosen not to adopt computers.

Other themes.

There are a number of other themes surrounding the context in which participants function that emerged: feelings about teaching, qualities of a good teacher, role of the profession, role of the teacher, relationships with the students, and beliefs and attitudes they hold concerning these themes. All these themes have bearing on the participants' decisions about their teaching and in turn in regard to decisions about computer use. These influences are further explored in the section specifically on computers.

The participants have strong commitments to teaching as an occupation. Even though two have had periods as administrators and JA, the "innovator," has recently

moved into a director's position, all express strong positive feelings about teaching. The word "love" is frequently used. The sense of enjoyment is evident in all. Some frustrations are clear and there is a particular concern about the quality or level of ability of the community college student. Still, when asked, "Why do you continue to teach?" In one form or another, all respond with strong reasons and positive feelings. They like working with students. They feel they are making a difference in the lives of their students. This difference in most cases is more than imparting the cognitive knowledge. JO who "loves academia" also expresses his concern for affective areas. R speaks of his concern for students' self-esteem; D wants to teach sensitivity to others. C says that he is "a socializing agent." All the participants express their desire to continue teaching. JA, who recently moved into administration, wishes to return to the classroom and continues to teach at least one class a term. R, who is the only one who is considering a career change, has yet to make any significant plans and one of his possible changes is to teach in public school.

Self-confidence.

Self-confidence or self-efficacy is related to adoption (Burkhardt, 1994; ; Gardner, Dukes, and Discenza, 1993; Koohang, 1989; Pancer, George, and Gebotys, 1992; Watson, 1967). The number of factors can impose on self-confidence and self-efficacy as it relates to computers. Here it is sufficient to look at the participants' feelings about their abilities as teachers and as learners. Just as Evans (1970) found in his research on ITV, I found the participants to have strong feelings of self-confidence and they believe that if they were to adopt computers they would be successful in using them.

The participants expressed strong positive self-perceptions insofar as their feelings about themselves as teachers. When asked if they would recommend themselves to another person, they all respond affirmatively. When I ask them to be specific about why they would recommend themselves, they are able to tell me the specific qualities they feel they possess that made them good teachers. These qualities do not always overlap among all the

participants but they are, not surprisingly, internally consistent with statements they make at other points in the interviews in regard to qualities they list as important for good teachers to have. In other words, while not all specify "caring" as a quality for good teachers, R, who states it is a necessary quality for good teachers, also, not surprisingly, feels that it is a quality that he possesses. It is also interesting to note that the combined list is not much different from an internal document produced by Miami-Dade Community College faculty during the process of developing their teaching/learning project. This document (see appendix 2) was the result of faculty committees and surveys and was used as a basis for the MDCC Statement of Faculty Excellence. According to the participants in my study teachers should be: caring, dedicated, knowledgeable about their content area, generous, kind, respectful, flexible, motivational, friendly, curious, hard-working, empathetic, and patient. In addition, teachers should facilitate students' learning and not take total responsibility for students' successes or failures. They should have a sense of humor and know how to communicate well. They should truly desire to teach and enjoy learning themselves. They should have the ability to explain difficult concepts in comprehensible ways. They think good teachers are dynamic and R says, "We're not stagnant" (R 3.3.3, 89).

Job satisfaction.

All the participants find teaching personally rewarding though not remuneratively beneficial. The participants feel that they, "make a difference for them [the students] in their lives." (N 3.4.1, press 13) and that teaching is very "gratifying." C says he thinks it is important to facilitate success so that "he and the students wouldn't feel like failures" (C 1.1.10, 333). So while all the participants say it is important to do have a firm knowledge of content and skill areas they are teaching, they also are cognizant of the affective needs of both students and themselves. They all maintain a positive self-image, and a positive view of the profession, even though they all express a lack of perceived respect from the larger

society for the profession. They are aware of the hierarchy within education that places research institutions above community college; yet, most of the participants are strongly committed to the community college and state their preference to work in its environment. Positive attitudes in regard to job satisfaction are cited in the literature as being important to people's receptivity to adoption of innovation (Murrell and Sprinkle, 1993).

Many of the participants mention that they like the positive feedback they get from the students. It makes them feel good that what they do is worthwhile. They mention students who, sometimes years later, have remembered positive experiences in their classes and have told them how their classes have affected them. The feedback is not always delayed and L says, "I enjoy seeing somebody, you know, getting that quick feedback, when you see somebody's learning something" (L 3.3.6, 192-93). C calls this feedback "strokes" (C 1.1.10).

Role v role in society.

The question, "What does it mean for you to be a teacher both personally and in terms of society?" yields some interesting results. The participants are much more focused on what it means to them and to their students than on the societal aspects. Issues of how society at large views the profession, how the profession fits into the society, what importance the role has in society and other such sociological topics that I think are relevant and intriguing, are not in the least stimulating to the participants. It seems that how students view their role and respond to them as teachers is far more relevant to the participants. So the picture is one that is seen through the teacher-student, teaching-learning relationships. The answer to the question is much more personal and humanistic than I had thought. This is important in later discussions as computers in teaching is more directly addressed.

Summarizing the background.

These participants are people who are committed to teaching, who "love" their work and their jobs at the community college. They enjoy the challenge of participating in

students' learning and are encouraged and rewarded by feedback and other evidence of students' success. In spite of the students, who may be difficult to teach, many of whom are at-risk, who are not pre-selected and screened by restrictive entrance requirements, and are frequently less motivated and less familiar with the academic community (Benz, 1996), these faculty are not discouraged. They see their work as significant, meaningful, effective, and essential. They believe that they can change people's lives for the better. Their perceptions of their roles in society are viewed through the impact they have on students.

The dedication they have motivates these teachers to change their behavior on the micro-level of creating the lessons, and try new methods to effectively teach course objectives and to facilitate students' affective learning. They are sensitive and aware of their own abilities and feelings and reflect on their work regularly. They are reasonably open to making changes but none show any interest in a major overhaul of their teaching. They do not perceive significant, overwhelming, irresistible, pressure from society, the college, peers, or students to adopt computers in their teaching. They know that computers are here to stay and that there is a "tidal wave" that eventually will overcome all resistance. They are in accord with the State of Florida general computer literacy objectives for students and think students must learn to be familiar with computers; however, they see that role as falling on others.

They do not see a significant lack of support from the institution; on the contrary, they see the institution's attitude, at least as it is expressed by the institution, as strongly supporting computer use. There is, however, some disagreement among them as to how well the institution is backing up the attitude in action. Nevertheless, these people are aware of the support available through CTD and CNS. They are also computer literate and have a personal computer on their office desks. Most of them use their computers to write lessons, and to create materials, and tests for their classes. They believe that they are sufficiently supported so that if they were to adopt computers for teaching that they have sufficient

basic comprehension in order to learn what they would need to learn. They are also familiar enough with the computer to make the opposite choice.

Though all of the community college professors must be minimally educated to the master's level, these participants had formal education and training well beyond the minimums and a number are currently enrolled in classes. They talk to colleagues about their work and seek their input on teaching. Though they do not go to many professional conferences, which may be due to the college travel policy, they do, however, attend workshops that are offered at the college and in the community. Most of them do not mention reading much in their fields outside of what is necessary to read for the course itself. Their influences seem to derive more from their own educational experiences and collegial interactions. They are people who see themselves as capable, good, motivated professionals who are interested in maintaining their skills and fostering their own professional growth.

The participants have a strong sense of what good teaching and good teachers are and they are able to list many of the qualities. Their self-esteem is positive, as they all feel that they meet their own standards and qualities that they believe are necessary for good teachers

Choosing Not to Use

> The experience of change is relative to each individual and cannot be separated from the predominantly tacit and personalized experience of stasis (Mahoney 1991 p. 323).

The participants have all of the requisites for a choice. They have computers readily available for both personal use and classroom use and they have support in the form of software and training; all at no financial cost to them. They have the intellectual capability to learn. They are committed to teaching. They have basic acceptance of the computer. They have chosen not to adopt computers in teaching. The answers must be somewhere in the data, in the interviews.

The topics emerge from the data and cover a range of notions. I have grouped them into fifteen areas. The areas are related to the literature and the first ten are presented in no particular order beyond stylistic concerns of writing. On the other hand, the first ten and the last five are separated. The last five are all relational issues. The fifteen areas are: (1) fear; (2) risk; (3) threat to jobs; (4) institutional attitude; (5) negative experiences; (6) support and follow-through; (7) attitudes, values, and beliefs; (8) complexity and difficulty; (9) relative value; (10) communicability; (11) human relations; (12) faculty and students; (13) faculty and faculty; (14) faculty and college; and (15) faculty and society.

Fear.

The literature is replete with references to fear (Skinner in Snider, 1992; Kay in Hannafin and Savenye, 1993), anxiety (Koohang, 1989), psychological risk (Ram, 1997), risk-taking (Bolton, 1997), computer phobia (Murrell and Sprinkle, 1993), security (Watson, 1967; Watson J., 1984), and computer anxiety (Arthur, 1990; Paivi, 1993). Paivi says, "Computer anxiety is defined as a fear or a prejudice, which appears when one is using computer technology or when he is thinking of the consequences of the use" (1993, p. 5). The participants in the study do not mention that they have any fear and only one mentions prejudice concerning computers (M says that she does not like them.) They do however express concerns about the use and outcomes associated with computers; these concerns are discussed later. This lack of fear may be due to the fact that all the participants are computer literate and thus familiar with the basics of computers. Their level of familiarity concurs with Paivi's research conclusions.

"Computer phobia has been defined as negative feelings, stereotypes, or preconceptions about the nature of computers and one's ability to understand and use computers" (Appelbaum, 1990; Currid, 1998; Rakes, 1989 as cited in Murrell and Sprinkle, 1993, p. 57). This definition does not fit the participants. The kind of psychological, deeply seated fears, anxieties, and phobias are not evident or reported by

these participants. It may be said, however, that there are other concerns that do have a psychological connection such as those explored in the human relations discussion later, but there is certainly not the phobic, physical responses and symptoms such as cold sweats and nausea.

When Murrell and Sprinkle (1993) find this result, "about one-third of the respondents demonstrated signs of computer phobia by indicating feelings that the computers could control our lives" (p. 61), we must wonder if we are not all just a bit phobic. The participants were further divergent from Murrell and Sprinkle's findings that computer phobia is related to job satisfaction. The participants in this study are all very satisfied with their jobs. Even R who expresses some interest in moving into another field is considering it more for the sake of change, "doing something different," than because of dissatisfaction with his current situation.

Risk.

Bolton (1997) states the following factors as fostering risk-taking, "lack of punishment for failure, institutional support, delegation of responsibility, trust, time, rewarding accomplishment, decentralization, collaboration, and communication" (p. 52). Most of these factors are present in the participants' context. There is some question about significant collaboration and communication among faculty (see later discussion about communication). Decentralization was not a factor that emerged in this research. Bolton further found that age, gender, and education level had little influence on risk-taking. She did find that discipline made some difference.

JA, a high end-user, who is out of the profile, says that she thinks others are afraid of the computer not functioning according to plan during a class. Speaking about herself she says, "I was a really good typist. I wasn't afraid of technology. I wasn't afraid to have the computer crash [stop working] and to not know what I was doing in front of a group" (JA 1.2.8, 278). She turns such experiences into teaching moments and feels it is important

that students realize computers do not always function well and that it does not constitute an irreversible disaster. JA says,

> It's one of the fears I found with teachers is that they are afraid to go into a classroom because they're afraid of something that might happen to make them look bad in front of the classroom and I think that's the core of fear you have to get over; that you have to except that technology sometimes doesn't work. The only way to accept that is to let it happen a few times and then it's okay; then students realize too and it still happens today. Technology in the workshops I give, things happen (JA 1.2.8, 281-287).

JA's comfort with computers, conviction that they are worth the effort, and self-confidence in the classroom contribute to her reviewing the inevitable computer crash as no more than a bump in the road.

On the other hand, JO sees such problems differently. His concerns about time are echoed by others. He says,

> You gotta have them so that you can use them. The computer in the auditorium I use a lot, literally conked out, wouldn't work for months before they got it back going again. So you don't know that when you go in how it's going to work but if you are talking about a 50 minute lecture, you don't have, you can't take 45 minutes getting it to work. You just can't do that, at least I can't because I have to cover the whole chapter, whole book, the whole topic and so I just can't spend a lot of time trying to get it to work. In fact that's what you do a lot (JO 2.2.7, 235-41).

While JO is not exactly expressing a fear of using computers, he does indicate a real concern that it will not work when he most needs it and that if he cannot count on it, he would rather not use it. He prefers to avoid the anxiety that would be caused by not being able to cover his lesson that period due to a computer malfunction. He uses an overhead projector and prepared overhead transparencies, relatively simple technology, which is easily and quickly fixed or replaced by audiovisual personnel when a malfunction occurs. He is comfortable with this situation.

The third person who mentions fear, L, says, "I am not scared of computers. I know that some people are. I learn a program (snaps fingers) very quickly. I just do it and I've got it. The problem is when you bring it into the classroom. Doing all those steps takes a lot longer" (L 3.3.2, 45-48). The particular concern that he addresses with his statement

about fear comes as a response to a query about whether he thinks the time necessary to learn program is worth it. It is also interesting that he says that he knows other people are afraid of computers but that he is not. It appears that he knows the common belief that people are afraid of computers but he offers no evidence as to how he knows and he lets me know that fear is not one of his problems with computers nor is it influencing his decision to not use them in the classroom. In fact, in one of the re-evaluation questions at the start of interview three, L says that he just wants me to know that he is "not anti-computer."

In that fear is a deeply rooted emotion and one that people are not readily able to admit even at times of severe stress, I was cautious about how I approached it. In the second interview I ask, "Would you try to describe your thinking involved in the decision not to use computers in teaching?" Then in the third interview the question is, "When you consider using computers, what are your thoughts, feelings, and reactions?" These questions are obtuse in regards to fear but I believe they do allow the participant to mention or not mentioned fear; furthermore, as is evidenced by the context of L's comments on fear, statements about one theme frequently emerge during the discussion of another, and this theme of fear does come out.

The participants are risk takers in many other areas of their teaching, as comes out in the background section; however, this is no guarantee of the risk taking carrying over to computers. They are not aware of fear of computers as influencing them and, as we will later see, other concerns are apparent. However, I cannot and would not completely rule out fear or at least anxiety as a factor and certainly I can attest that I have had many anxious moments with computers when I have had crashes that I thought had destroyed much important work and I still experience a bit of tension when installing new hardware or software. Perhaps the question might be further explored in another manner.

Threat to jobs.

The first Industrial Revolution is generally considered to have begun around the turn of the 19th century. It is marked by the first organized resistance by the Luddites, in 1811, in Nottinghamshire, when they attacked the new knitting machine. The Luddites were opposed to the machines because they eliminated their jobs and contributed to concurrent changes in their society and lifestyles that they viewed as harmful. Neo-Luddites, and many who might not classify themselves as such, are opposing computers and certain other technology for similar practical, social, and philosophical reasons (Sale, 1996). Chellis Glendinning, as cited in Sale, says the three basic principles of neo-Luddism are:

> (1) opposition to technologies "that emanate from a worldview that sees rationality as the key to human potential, material acquisition has key to human fulfillment, and technological development as the key to social progress."
>
> (2) recognition that, since "all technologies are political, the technologies created by mass technological society, far from being "neutral tools that can be used for good or evil," inevitably are "those that serve the perpetuation" of that society and its goals of efficiency, production, marketing and profits.
>
> (3) establishment of a critique of technology by "fully examining its sociological context, economic ramifications, and political meanings... from the perspective of not only human use" but of its impact "on the other living beings, natural systems, and the environment" (p. 237-238).

Given that I was interviewing academic people I expected to come across at least one person who objected to computers on philosophical grounds in the broadest sense such as seen above. The common assertion that computers are displacing people, which is without a doubt true in the business and industry world, has become widely accepted in education as equally true. "Faculty fear that the transformation of teaching and learning through information technology will be used to diminish their numbers and compensation because of the reduced importance of the traditional lecture" (Burke, 1994, p. 4). These sentiments are echoed by a number of others (Murrell and Sprinkle, 1993; Westhuizen, 1996). Callister and Dunne (1992) relate the tale of a colleague who did not believe that ordinary teachers could successfully implement the curricular and methodological changes

she wanted so she decided to "end-run" the teachers by using computers and "teacher-proof" the curriculum. However, Murrell and Sprinkle (1993) point out that such efforts to replace teachers with technology have generally failed.

The participants feel computers are generally beneficial and all acknowledge that computers have become a permanent part of our society. M comments, "But something like reading I don't think could ever be solely taught through technology" (M 2.2.8, 262-263). D alludes to others who have a notion that computers will take over. She does not concur but rather calls for a "good marriage," between people and technology.

> D I guess I get concerned, I know some things have to be distance learning, I just think the synergy and personal touch of the classroom sometimes that's needed. If someone just needs something quick and I just hope that at some point you know like half our classes aren't just like on a computer you know what I'm saying. I guess that's the concern too. Not that the computers oh well you know the perception people are saying computers are going to come in and take over. Not like that but I just think that you have to keep it in perspective. There needs to be technology and then there needs to be people. That can be a very good marriage if it is in balance. (D 2.2.15, 500-508).

Overall, the participants are not concerned that computers would replace them. They are very concerned, however, about the effect computers might have on the student-teacher relationship. We will look more deeply at this relational concern in later sections.

Institution's attitude.

McLaughlin (1976, p. 343) says, "institutional receptivity was a necessary but not a sufficient condition for successful implementation." In response to the question about the institution's attitude toward computer use, R says:

> I sometimes feel... they almost... I don't know that they believe this or not, but I almost think that they think that computers can do what we do. Administrators would like to be able to think oh Jesus we can get a computer then we don't need the faculty. The computer can do it. The students can type and what ever it is the computer will react to what ever they have said or done and give them some feedback and then they have to respond to that. I suppose that is the potential for computers but there still is that human interaction that you can't replace. There's that factor and that factor to me is perhaps not even measurable but it's maybe intangible but it's so valuable that it should never be eliminated. (R 2.2.8, 273-281).

While he thinks there may be some thought on the part of administrators that faculty could be replaced by computers, he is also confident that those who think so will come to realize its absurdity and thus, he is not threatened. Is this a localized response or a neo-Luddite philosophical concern? I think it is the former as he does not mention any overriding value laden concerns such as those of the neo-Luddites.

Negative experiences.

Gardner, Dukes, and Discenza (1993) believe there are causal links that move from experiences to beliefs, to attitudes about computers. They believe that the causal relationship between "behaviors (in the form of experiences) and the beliefs (about the ability to use computers) was supported" (p. 436) by their research. This model was first proposed by Fishbein and Ajzen (1975). Gardner, et al., found that, different from Fishbein and Ajzen, there is also an interrelationship between experience and attitude. They say, "For many subjects, the experience of using computers leads to negative attitudes about them" (p. 436). They further believe that if the early experiences with computers are negative then computers will be avoided. The participants in the study relate negative experiences that fall into four categories: hardware, software, training, and support. These areas are not very distinct and clearly separate for the participants. Though they all have basic computer literacy, they are frequently not clear about where hardware ends and software begins or where either separate from support. Here is an example of this ambiguity:

> B What about support for technology, the actual hardware? Do you feel that you have adequate support for that? Keep it running, maintaining it?
> R Yeah I've had some problems.
> B Getting it fixed coming by and helping you figure out our problems and stuff?
> R Yeah well GroupWise [a network program] was making my system crash and they would come in and fix it and then it would crash again and I said I need this thing. I used it for word processing all the time and I can't afford this. I said just trash, just dump it, trash it, get rid of it. So they did and then somebody decided we'll come back in and they were going to try it again and they put it in again and it started doing it

again and they trash it again and now it's finally working. But you know.

B That's a software problem rather than our people...

R Supposedly, yeah but yet support people have to come in and fix that you know and to come and work on your the whatever, your system and see what they can do to correct it and for me the downtime is too valuable (R 2.2.9, 315-328).

In this exchange R confuses GroupWise, a network software program, with the hardware. Even when I point out the difference it still all blends together for him. His concern is whether it works or not and he relates to the complete set of technology that either does or does not do what he wants. His decision is to "trash it" and remove what he perceives as unnecessary software in order to be able to use his computer in the manner he wishes. It is of little or no concern to him that without GroupWise he has no e-mail, as he never uses e-mail anyway.

In yet another example, N relates the following far less than positive encounter with support:

N One example comes to mind that wasn't a very positive experience. I called on one of them [CNS person] one day because I wanted him to teach me how to get into the Shadow [a mainframe computer system] to check the enrollment and I said hey this is going to be, this shouldn't be too long and yes it took hours for him. He got up every 15 minutes to go looking for help for what he's doing wrong. He was calling on the phone and going to call me back. Obviously I chose the wrong man from this group. Now I know better. And yes by the time three hours had gone by I wasn't in the Shadow. He wasn't in the Shadow either and I was just saying to myself, "what did I do with these three hours," I think it was towards the end of the semester and I had a thousand other things to do and it would never come to mind that it was going to take three hours and then I wasn't able to even get into the Shadow. (N 2.2.16, 558-565).

A little later in the interview she says:

N Now that I got a computer on my desk, I went to the training sessions. The person that gave the training was very knowledgeable. There is no question about it. And he is pretty good as a trainer, as a teacher and now there I was in the role of student but nevertheless I left often a little frustrated. He showed me three ways of doing things. You can do it this way, you can do it this way, you can do it this way. There is a shortcut and he showed us that three times. He said, "Okay, you can reach this, you can get into this." I don't know. I don't even have the computer language. You can get into this...?

B System or window?
N System or window this way but you can also there is a shortcut... (N 2.2.16, 572-584).

N Clearly I did not have a positive experience in either the situation with computers or with support personnel. In many ways she came away more confused than she had been. She was not any more comfortable with the meta-language of computers; she did not learn any of the three ways of doing the process that was the point of the lesson; and her desire to work with computers, if not dampened, was certainly not enhanced.

R was recently confronted with obsolescence. In this case it was a software system program that is being replaced. He was in a workshop for an older system, Camelot, and discovered that the new system, Odyssey, would make Camelot obsolete. He was clearly upset about the waste of his time.

R Camelot, now Camelot is still in operation. So we had this workshop. How to use Camelot. I had to go see three different people to get into the system, just to get into the system and spend an hour with one of them. And then they gave me this fat booklet, I told you, I should do this, and it says that the Camelot system will be no longer used and everything in this booklet will be obsolete. And that by, what is it, June, we're going to start with the Odyssey program. I said thank you. I am not putting in another second. I am not going to learn the Camelot system. And am not going to advise students; it's that simple. I'm going to learn a system that's going to be obsolete in, what three months? You hear that? There's no way! (R 2.2.11, 384-393).

"Frustration with learning how to use the computer causes some teachers to give up at the early stages of adoption" (Sandholtz, Ringstaff, and Dwyer, 1990 in Hannafin and Savenye, 1993). It is easy to see R's frustration and easier yet to understand why he would not want to expend energy in learning a program that will be obsolete in three months.

Efficient use of their time was important to these professors. As Seidman (1985) discovered, community college faculty feel many constraints on their time and many pressures to perform the varied parts and to accomplish the numerous tasks associated with

teaching in the community college environment. They do not tolerate wasting time. I will take up this theme of time again later in the analysis.

In addition to the systems and network software that has been around for years on dead terminals and more recently accessible on personal computers, most of the participants are familiar with a presentation program, PowerPoint. PowerPoint is provided by the institution on each of their personal computers and workshops on its use are frequently offered by CTD. One of the participants says:

> C I know how to use PowerPoint; I can make Jim Dandy PowerPoint presentations. I know how to do that. What I see is or what it seems to me is that those are flashy but they're not really much better than what I can do on the blackboard. They just move and they have colors but they're still words. I can remember PowerPoint presentations that I have seen but what I remember are not concepts. What I remember are images of something coming in from the left and swinging up from the right materializing in from little dots into big words and things like that. I remember the visual imagery. I don't remember the ideas behind them at all (C 2.2.8, 269-276).

R and JC have similar criticisms of PowerPoint.

> R Yeah. OK. College Training and Development. I don't want to invest the time in that stuff to do it. I look at it and I say, "What am I going to use this for?" you know? To make what I give to my students pretty, you know. Yeah. I get things. For example, I get these memos, these cute little pictures, and stuff like that, and I don't see the relevance of them. I guess I am just too pragmatic. I just think, you know, you got something to tell me, tell me, and all the other little thrills and stuff that's on there, to me, is of little or no value to me (R 2.2.8, 259-262).

On the other hand, D is an exception to the general negative reactions to PowerPoint expressed by the others. D has seen a colleague in her department use PowerPoint creatively and she is intrigued. She says that she will attempt to learn and use it when she has more time.

> D I'd like to become more knowledgeable and more proficient in doing PowerPoint because I like to I would like to start doing it because I think that would be innovative and creative in terms of presenting the information. It would be a different format so that I definitely (D 2.2.14, 478-486).

She thinks the visual aspect will facilitate learning, that the visual attractiveness will help with our population of at-risk students in her SLS classes. D helped develop the SLS courses and she is very sensitive to the differences in students learning styles; in fact, she teaches students to discover their individual learning styles and how to use this information to improve their success in school. She knows that many students are visual learners. Postman (as cited in Collins 1991) says that the visual media -- television, film, and computers -- have begun to bring about a new kind of visual thinking, and a number of educators are exploring how to use visual media to enhance learning. D seems willing to go in this direction but has not yet found the time for the process.

N first looked at CAI software in the early 1980's and did not see a difference between software and workbooks. She has not seriously looked CAI software since then. She says:

> N In the early 80's, as I said, number one, not all the materials were appropriate. As a matter of fact, they were not appropriate. That was one problem. The other problem is that I saw what they offered me was basically a workbook with clicking with you know with whatever and I have a problem with workbooks. Anyway I don't like fill-ins because I think fill-ins are very limited in learning (N 2.2.11, 370-374).

Support and follow-through.

Support in the sense of training, as mentioned earlier in the section on background, causes some negative reactions. D and JO found that that trainers do not meet their learning style needs, while C, R, L, M, and JC do not find the content relevant to their needs. D feels rushed and crowded in the workshops and, in part, avoids taking them for those reasons. All of the participants found the times and locations for the workshops very inconvenient and cited these as reasons for not attending more. There is, yet, another aspect of support that was mentioned only by M, who has had some experience in developing and working with computer projects. Her work on these projects was limited to dealing with the content not the technology itself. She had negative experiences with

good projects being dropped and not funded or otherwise supported after initial development.

> M We spent hours on that. It was not a CAP (Computer Application Project) project or one of those and we have it but I haven't been able to use it with my students because it's been put in one lab and we don't have access to that lab anymore and so now I am in the process of getting this on our system and then we have some other technology kind of problems. It needs this much memory but ... (M 2.2.8, 254).

This lack of follow-through has happened often enough at the institution that many innovators I have known have been discouraged. I was leading a group working on integrating ecology into the curriculum and three of the five participants asked at the outset if the work would be implemented or just shelved and left to collect dust as has happened to so much other good work. Research on innovation at an institutional level should explore this problem further.

The negative experiences fit into Rogers' trial period (1985, 1995) and their apparent impact concurs with Fishbein and Ajzen (1975), and Gardner, Dukes, and Discenza's (1993) work on attitudes and beliefs in regard to computers. Whether or not they found their experiences sufficiently negative to reject computers, it is certain that the participants did not find their experiences sufficiently convincing to adopt computers. They did not find the software compelling and useful. Comments by R and C about PowerPoint parallel comments by Lancelot Hogben (1949) in reference to another educational technology. "So far commercial production of educational films has undertaken no programme more ambitious than making the easily comprehensible more picturesque" (cited in Snider, 1992). R and C's comments on the prettiness of PowerPoint, while noting their picturesqueness, call into question their usefulness.

While N was knocking the earlier CAI software, several of the participants remarked on the poor quality and questionable effectiveness of the software that is currently available. They did not feel that the software was appropriate for the content areas, that it did not cover all the objectives, and that it was not flexible enough. It is a common theme

that if the programs can not be shown to be significantly better than the participants' current methods then why invest the time and energy in learning and using them. L gives the example of graphing in his math classes. He says that he can draw a graph, with different colors, that will demonstrate the algebraic equation in his lesson on an overhead projector faster than he can get a computer to do it. C, JO, R, and JC see no gain in presentations on PowerPoint vs. blackboards and overhead projectors. M, N, C, and R see CAI as basically electronic workbooks. C has had experience with a course at Florida International University (F.I.U.) in which the materials and handouts were posted on the professor's course Web page. He says that it is little more "than electronic mimeographing and distribution." On the other hand R extols the virtues of the computer for word processing.

> R It's really an amazing thing. From that standpoint what computers have done for me. The ability to type and type something beautiful and clean. You know those miserable, dirty, filthy dittoes. You get that crap all over your fingers. That solution, you know, the solvent (R 2.2.10, 354-357).

So it appears that if there is usefulness there is use, which concurs with Rogers (in McLaughlin, 1976) who says that innovations are more likely to be adopted when they are obviously superior to previous practices.

Schieman (1990) says that there are two common reasons for rejection of educational media, "The first is the mediocre quality of the product. The second reason is often inappropriate classroom use." He continues, "Upon closer examination these reasons to turn out to be symptoms and do not really approach the essence of the problem" (p. 5) and, in fact, there are many more reasons.

Attitudes, values, beliefs.

Pancer, George, Gebotys (1992) take Fishbein and Ajzen's model a step further. They suggest a theory of "reasoned action" in which the best predictor of behavior is the person's intention to engage in that behavior. These researchers found a strong connection between values, beliefs, attitudes and behavior, which in this case is adoption

of innovations and computer use. The idea that perception of usefulness is an influence on use is echoed by a number of researchers (Baack, Brown, and Brown, 1991; Koohang, 1989; Poole in Terrell, 1991; Sacks, Bellismo and Mergendoller, 1993). We also have literature supporting the influence of experience and background on computer use (Pancer, George, Gebotys, 1992). Rogers says that if there is a low perceived advantage to an innovation and there is no clear advantage to adoption that it is not likely to be adopted (1983). Wiske, et al. (1990 in Hannafin, 1993) states that some teachers simply do not believe that the computer improves outcomes and found that some believe that the computer can become a mental crutch. These sentiments concur with the participants. L recalls his encounter with the student in a math lab who had no idea why a graph produced on the computer looked the way it did. She did not understand that the computer uses the algebraic equation to produce the graph.

> L There was a student. I'll never forget. She comes into the math lab and I see her sitting in front of the computer doing all the trigonometric functions and all the graphs. She's typing away. She asks me a question and it was a question on why is this graph doing this or no what is the graph and I said well here's the graph. She goes, "well I know but it's right here on the computer" and I said "look, yeah but why is it doing this why is it moving this way?" "I don't know I just see it on the computer" and I'm like well but where's the meat you know what I mean (L 2.2.7, 229-233).

JO concurs with L. He strongly believes that the use of computers before learning the process by "hand and mind" is detrimental to students learning the fundamentals and essential skills. For example, he takes his students through the process of growing and feeding organisms in the traditional way before he shows them a simple computer program at the end. He asks the question, "What happens when the power goes off?" This statement is echoed by a number of participants; at its heart is a question about whether students will know essential, basic, skills and information before the computer enters the process. These have been issues in schools since the introduction of cheap calculators. The concerns go to pedagogical questions and will be discussed in more detail later.

Burkhardt (1994) finds attitudes about self-efficacy regarding computers a powerful influence on use. Clarke (1996) says, "Efficacy is a psychological construct that has both affective and cognitive components. Posited by Bandura (1997) as an important self-perception construct that mediates linkages between cognition and behavior, efficacy expectation is the personal believe that one can successfully execute a behavior required to produce desired outcomes. Efficacy expectation is a major factor in determining the choice of activities, the level of effort to be expended in the length of time one will sustain an effort in dealing with stressful situation" (p. 38).

All of the participants were very self-confident in regard to their abilities as teachers and did not express a lack of confidence in their ability to use the computer. To some extent this is demonstrated by their use of the computer for word processing and in their trials of other programs. They did not appear to have reservations about their ability to master the necessary skills if they were to choose to use computers in teaching, as is expressed here:

> I learn a program (snaps fingers) very quickly. I just start doing it and I've got it. The problem is when you bring it in the classroom doing all those steps takes a lot longer. I find it's just quicker to go to the board and draw it and what I do use is the overhead. I make a joke that I feel sometimes like a color printer because I am using different colors like when I doing graphing and things like that I'll do one thing or even when I am using formulas. I'll write the formula out and I'll rewrite the formula. When I do substitution of numbers I make sure I am putting in different colors. If you want to talk about technology I guess that's I know that that's not what's usually considered technology (L 3.3.2 46-54).

As mentioned earlier in the section on negative experiences, the participants' attitudes were influenced strongly by the time commitment they perceived as necessary to learn the programs and to use the computers in teaching. L mentioned speed, again, when I asked him what might facilitate his use of computers in teaching.

> L see if I could actually get something that was very quick that would do it basically as quickly as I could put it on the board I would do something like that like somebody's been what do they call it the via voice where it just does what you tell it to do (L 3.3.11, 374).

JC also mentions voice recognition as a possible attraction to computer use since she cannot type. Neither L nor JC have considered the time investment required with voice recognition programs. The voice recognition programs must be trained and there is significant learning involved to successfully use such programs. I can attest to this as I have used a voice recognition program to draft this work. Even after much training it is less than perfect.

Complexity and difficulty of use.

"Complexity is closely associated with other dimensions of change and is difficult to measure" (Berman and McLaughlin, 1976, p. 358). Inherent in the issue of time, though not specifically stated, is a certain amount of difficulty associated with learning and using computers in teaching. According to Rogers, "Complexity is the degree to which an innovation is difficult to understand and use" (1996, p. 130). Though computers and programs have become increasingly easier to use, no one, even high-end users, would argue that there is not still a certain relatively high learning curve. There is always a time commitment associated with learning any new technology even if there is transference. We only need to think about our new cars, TVs, VCRs, sewing machines, lawn mowers. Even though we may have used these objects in one form or another for many years, a new one has unique, new features that require learning and practice. In these examples, we are already committed to having the object and have decided that they are worth the effort to learn the idiosyncrasies of the new one. However, the complexities of the computer are influences that are at play at the moment of decision and contribute to reluctance to adopt. So, as Ram, expanding on Rogers, says, "The complexity arises from two dimensions: complexity of the idea (is it easy to understand?). Complexity of execution (is it easy to implement?)" (1987, p. 210). These are precisely the questions that the participants are asking themselves about the computers and so far their answers have been, "not easy enough."

A number of the participants spoke to the need for simplicity in life and work. This would be an extraordinarily interesting theme to study further. At the time, I did not see the potential of the ideas but JC not only viewed it as a question of simplicity verses complexity but also as a question involving spirituality.

> JC I would rather not deal with them because I don't have that. I don't want that. It's not that I don't have it I don't want it because my way of coping emotionally is to not. I don't want more information. I want just keep it simple (JC 2.2.13, 431-33).

JC's statement is almost an existential response to the environmental over-stimulation in our society. This particular idea is very intriguing and deserves further exploration. I noted in my journal that I had wished I had gone down that road a little further with her. Nevertheless, the call for simplicity is echoed by N in her story about the computer training she received and her plaintive for learning only one way to accomplish the task rather than being mentally swamped with three alternative ways to accomplish it.

M, who classifies her self as a nonuser, has an interesting "approach and leave" attitude toward her experiences with computers. She has been involved in a number projects with computers in teaching and she has not successfully incorporated them into her own teaching.

> M It was a conscious decision. It didn't just happen. Part of that was very conscious. I think still I am not a very technologically proficient person. If those are good words to use and I certainly have not infused it into my curriculum. It is very much supplemental to my curriculum and I think for the most part that's where it's going to stay, in my mind.

When challenged on this come and go behavior she says that she was a child of conflict.

> M Remember that I said that I was a child of conflict....and that is where I am in terms of technology (M 2.2.19, 667-8).

Later, while we are talking about it again, she says:

> M I just don't like computers and that is a purely subjective feeling. I don't like the idea... first of all the computer is programmed by someone and this gets lost in the shuffle (M 2.2.17, 572-4).

She seems to trip quickly back to what she knows and is familiar and comfortable with using. In her on words, again:

> M If I were to rate myself on a rating scale like that [refers to Rogers], I would be at the very lowest level. (M 2.2.19 673)
>
> M But the movement is not always forward it is a vacillation. Because I see that in myself. When I worked on the project with you and another with Sharla [a colleague] I did move forward, very much far forward and then I am back here. And maybe if I did another project I would go a little bit further but I think that I somehow I would come back to where I feel psychologically most competent at this point. While recognizing that I can move and that I have moved, I am going to go back to the point of least resistance in my mind (M 2.2.20, 691-96).

What M calls vacillation, Mahoney (1991) describes as a psychological process he calls "oscillation." It is a state that occurs when a person is confronting change. The dynamic that is so evident in M's behavior is also work to some extent in all the participants. They have tried and observed the computers and software at different times and yet have not adopted them into their teaching. It appears that simplicity, the opposite of complexity, is a goal that many of the participants seek. It is for some almost at the level of a value that they would not easily give up. If simplicity is, in fact, an existential value, which computers are threatening, it would certainly be a factor that mediates against their adoption and worthy of further study.

Relative value.

The relative value of the programs that participants have seen has not encouraged the participants. They do not see a significant gain in PowerPoint over the overhead projector or even the blackboard. They do not think the learning necessary to use the programs results in a product that is sufficiently better than what they can create using readily available, current technology and support: word processing, secretaries, photocopiers, overhead projectors and transparency makers, and blackboards and chalk. These programs lack what Rogers (1983) calls a relative advantage and superiority in the new product. It is interesting, and perhaps significant, to note that they do not use

film, TV, or other educational media very much either. They are aware of computers and have some knowledge of the programs available but they do not invest much time in trying out computers in teaching or in looking at new programs and hardware. There appears to be little movement towards continuing trials, ongoing assessment of computers in any form, or use other than word-processing and the required lab attendance associated with the course.

It is essential that we remember that the participants' perceptions of complexity are what are essential. Their perceptions are pictures painted with the colors of experiences, beliefs, and doubts. "The experience of change is relative to each individual and cannot be separated from the predominantly tacit and personalized experience of stasis" (Mahoney, 1991, p. 323). Their answers to the questions about complexity are relative to their perceptions of the value of the outcomes. They have expressed considerable doubt that the outcomes are worth overcoming the complexity. Concerning the relative value of the time investment, most of the participants have concluded that computers are just not worth the time and the effort.

> N For me it was much easier to give it to the secretary and not to struggle with that time to try to remake this exercise which I have to create anyway. I give it to her and I say make me four different versions of this and I don't have to waste the time of working it on the computer. (N 2.2.14, 488-490).

Communicability.

It is interesting that D is intrigued by her colleague's use of PowerPoint. A number of the other participants have said that they would be interested in seeing colleagues who teach the same courses using computers in teaching successfully. In discussing informal informational source roles, Hurling says, "This type of individual [the one who already is using technology] acted as a guide or tutor instructing the potential adopter on the use of the system to discuss benefits they may have accrued from innovation. The role of the facilitator may be found to grow in importance as the complexity of the technological

innovation increases" (1995, p. 18). This is similar to one of the characteristics of innovations that Rogers discusses, communicability. "Communicability is the degree to which the results of an innovation may be diffused to others" (1962, p. 132).

There was a lack of consensus about other colleagues' willingness and interest to discuss ideas. R, N, and C perceived a lack of willingness from other colleagues to discuss ideas about teaching. On the other hand, L, JA, M and D did find colleagues with whom they could talk. The question did not come up, with the JO or JC. All the participants had had experiences in other situations where there had been much discussion about teaching and had found that where colleagues are consulted, they serve as valuable sources for ideas and stimulus for change. Those who found no one willing to talk were disappointed and frustrated and expressed some sense of isolation.

Human Relationships

> Apparently very few of us know enough about human nature and behavior to recognize that trouble is usually due to our own misprehension of the consequence of sequential events we initiate. And this misprehension of the consequences of the effect of our behavior on other people is due primarily to our failure to take into account the "form worlds," purposes and aspirations which others have in order to protect and further their own well-being and development (Ames, 1968, p. 113).

A number of researchers suggest that individuals tend to be more receptive to change if the groups with whom they associate are open to change because they tend to adopt the attitudes of the group (Coleman, Katz and Menzel, 1966; Davis 1969; Homans, 1950; Lewin, 1951; Newcomb, 1943; Sprague in 1982, as cited and Bill, 1998; Zaltman and Duncan, 1977). Burkhardt (1994) suggests that peers and informal discussions influence attitudes about computers. "The technical aspect of the change is the making of a measurable modification in the physical routines of the job. The social aspect of the change refers to the way those affected by it think it will alter their established relationships in the organization" (Lawrence, 1969, p. 7). The technical aspects, in terms of this study, would be the adoption and use of computers in teaching, issues of accessibility, and technical

support. The social aspects are the human relationships. Lawrence suggests that "resistance to change does not arise because of technical factors per se but because of social and human considerations" (Lawrence, 1969, p. 12). We have built a context, which includes experiences, attitudes, beliefs, values, accessibility, familiarity, technical issues of support, environment, hardware, and how these have influenced adoption. Now, we must focus more narrowly on social and relational aspects.

The relational issues that emerge from the data fall into five groups. The order presentation is of little consequence; however, there is a logical sense in the sequence. We could move from the individual outward to society or from society inward to the individual faculty. It is important in either case to remember that all the relationships are dynamic and interactive. Thus, it is a personal choice to begin with the individual.

It is difficult to support the notion that methodology is a relationship and any attempt to do so at this juncture would be like wading into a thick swamp from which we might never extricate ourselves. However, it does not require a great stretch to acknowledge that for professional educators methods are a manifestation of inner ideas, thoughts, feelings, beliefs, values, and attitudes about the nature of knowledge, teaching and learning, students, and self. It is also not difficult to see that methods are the primary form of interactive communication between the students and the teachers. The importance of looking at methodology is suggested in the literature, which says that traditional teachers tend to resist innovation. Evans (1970) in his massive study of resistance to innovation and universities that focused on ITV, found that the anti-ITV professor "spends more time doing what he thinks he does best -- teaching by traditional methods. He sees as the greatest threat those forces within his environment which might 'dilute' the academic aspects of the university, or alter his role within" (p. 90).

I attempted to elucidate data about the teachers' methodology by indirection. I asked them to describe a typical class and in so doing avoided two problems that I might

have otherwise encountered. The first problem is that many, even superior teachers, never learned or have lost the meta-language of education that would allow them to easily label and talk about their methods. Most teachers do not utilize one specific approach and this eclecticism would further complicate their use of meta-language. Second, describing a class not only eliminates the need for such vocabulary, it also avoids struggles over what the terms mean and more importantly over whether the participants actually do what they say they do. By asking for verbal descriptions of behavior, by telling what they do, it is not important for them to say they are didactic or constructivist, teacher centered or student centered. They need not use terms such as humanistic, traditional, or innovative. However, they do need to tell what they do and, then, it is for us to decide what they are. This is very much in accord with the assumptions of qualitative research. Much like the way Eisner (1998) suggests we deal with the significance of qualitative research; like art appreciation, it is in the eye of the beholder. Furthermore, this way of discovering their methods does not force me to verify if what they say is Truth. Thus, I avoid the distortion of pushing the terms through yet another set of filters of my own understanding of the meta-language. I can use their words to find out what they practice and how they see their own methods. Then, based on their language and my interpretations, a picture of their inner self develops. While this picture is not perfectly clear, it is less cloudy.

In addition to the description of a typical day, there are seven other questions in the interview guide which, in part, are designed to discover methodology and other relational issues: in interview one, "Who influenced your teaching?" and "How did you see the role of a teacher?"; in interview two, "Would you describe your relationship to students?"; and in interview three, "What does it mean for you to be a teacher? -- both personally and in terms of society." "How do you see the role of a teacher now, compared to when you began?" and "How would you describe yourself as a teacher?" It is interesting that every one of the participants answered the last question from the students' view of them and not

in terms of their methods, yet their methods were uncovered. This supports, in part, the need to get at methodology, and other data, through less direct means.

The participants are, in general, traditional in their methods. They see their roles as imparters of knowledge, transferring knowledge and skills from them to the students. They use predominantly didactic methods that are more teacher centered than students centered. They are objectivists, who believe that knowledge is external, knowable, and transferable. When they describe the qualities of good teachers they say that good teachers must be masters of their content and they are essential sources of information, ideas, and knowledge. They believe that students need to encounter the essential concepts, achieve mastery in large part through practice, and then the skills and ideas must be demonstrated on appropriate tests. L says, "I've always seen the teacher, I guess I still do. The fact is, we got this knowledge and we need to pass it on" (L 1.1.13, 432-33). This sentiment is echoed by all of the participants, except the innovator. This is not to say that they do not incorporate some student-centered activities, such as group discussions, projects, or that they do not occasionally move to sitting in a circle. In fact, at times, they use language such as, "coach," and "facilitate learning." However, according to their own words, they are much of the time in front of a class that faces forward using blackboards or their equivalents (overhead projectors, whiteboards and markers).

> C Uhm but you know we're not geared up in our. You walk into a regular classroom and it's just like a regular classroom in the 1950's. You know seats and a blackboard and chalk and a desk up at the front and that's it. That's what we're given. (C 3.3.1, 18-20).

The participants, in attitude and practice, are far from the constructivist views of Dewey, Vygotsky, and Montessori, and others. They do not approach the innovativeness of the process or the procedural syllabi discussed in Markee. The constructivist places the student at the center at all times. The teacher role shifts dramatically away from the omniscient teacher at the front of the class to the facilitator at the periphery, who engages students in educational experiences. The classroom layout looks different, materials are

different, and resources are employed differently than in traditional, didactic settings. The participants clearly do not follow constuctivists' ideas.

The participants have viewed computers in teaching as supplementary to their methods, such as CAI, or as substitutes for them, such as the computerized presentation in place of the overhead. Their considerations of PowerPoint have taken them only to the point of comparing it to their own current presentation styles and as such they did not want to expend the necessary time and energy to learn and to use it. They did not see it the way the innovator, JA, does. JA teaches her students to use PowerPoint to make their own presentations in a speech class. She integrates the tools of word processing, the Internet, photograph and click art programs, scanners, and a presentation program into the course objectives. Students would ordinarily make oral presentations with other kinds of visual aids. So in her case, the task-based, problem solving, methods lead the teacher and the students into a very different view and consequent use of computers. They are the tools for executing the task of students, not teachers, making presentations. The participants look at other software and their fields in much the same light. L sees graphing programs as not only slower than his markers and an overhead projector but, when in the hands of students, as detrimental to learning.

> L. I think when you give them the calculator at the level of what they're learning, it's a disservice because what happens is I think we're all lazy, all of us, and I put myself in that category too. If I have been given a lot of these tools too early, I probably wouldn't have been learning it on my own and that's what my concern is. I don't have a problem with the technology but I think it needs to come as a reinforcement and after it's [the basic skill] been already learned (L 2.2.8, 249-254).

This sentiment is echoed by JO also. These "lazy learners" do not know the essentials of the content area nor the basic skills. They cannot explain how the computers solve the problem. According to some participants, the consequence is that if the power fails the student cannot function.

Other encounters the participants have had with computers in teaching have focused on the lowest levels of use, Computer Assisted Learning (CAL) and Computer Assisted Instruction (CAI) and as such have real and reasonable criticisms of the software. Again, they see these types of programs and uses as no more than electronic forms of other instructional material and communication media. According to the participants, there is not great advantage in e-mail over voice mail or paper forms of communication. There is little difference between drills and practice on the computer and drills and practice in a workbook, aside from the dubious advantages of immediacy of response, or the impersonal, infinitely patient, and non-biased "behavior" of computers. It is interesting that JA and a number of researchers (Collins, 1991; Snider, 1992; Hannafin and Savenye, 1993) concur with this criticism but for very different motives. Rather than seeing the CAL /CAI programs as poor replacements for existing techniques, they criticize them as merely perpetuating old, traditional methods. JA calls them, "drill and kill." These people call for a restructuring and a move to the constructivist view of education. According to them, if computers are to be implemented at their current, fullest potential, there is an inherent, required, pedagogic shift, which puts the students and computers at the center and teachers circling among them. "Teaching with a computer requires not only a degree of technical proficiency but also the acceptance of a decidedly different role" (Hannafin and Savenye, 1993, p. 28).

Faculty and students.

While, as we saw before, the participants are not fearful of their jobs per se, they are not enthusiastic about a shift in their relationship with their students. The relational concerns are very strong.

> B So you feel the computer in the classroom then takes away from the social process
> JC I really do
> B Human interaction
> JC Yeah. I really do. I but I may be wrong but that's just how I feel. I just think the whole physical setup discourages it (JC 2.2.7, 241-245).

They place a high value on this relationship with the students. They see their role as a decidedly human activity. They do not believe that computers can provide the same humanness that they can nor do they see how they might continue their own humanistic involvement in students' learning using computers in their teaching. JC says that she thinks computers isolate the students and impact their social dynamics. D sees the computer as having potential for diminishing human contact. She says, "Now I'll be honest with you, while I think technology is wonderful, I think a personal touch will always be there. That's just me. It's the counselor in me" (D 2.2.11, 348-350). There is a sense that the computer can come between the student and the teacher, an unwelcome event. They do not see the computer fostering these all important values of human interaction.

The participants like being with students. They enjoy their company in the class, feel they learn from them, and their positive feedback is more often derived directly through the interactions in the class. These are powerful, emotional stimulants and intellectual reinforcers that they perceive as interrupted, intruded upon, or threatened by computers. This incongruence with their values works very strongly against the participants' use of computers in teaching. Rogers says that congruence with existing values is necessary for adoption (1995) and it is clear that a congruence of values is lacking.

The participants see themselves as protectors of students. There is a certain *in loco parentis* sentiment functioning to a greater or lesser extent in all of them and this is most strongly evident as it concerns the students' learning. The participants have a list of concerns that computers might not only be ineffective in promoting learning but may be detriments to learning beyond harm to the primary student-teacher relationship.

> D Attendance is a very strong percent in that class. Because, doing the research and looking back, one of the main reasons that students weren't successful is that they just never went to class. So, how can you take a SLS [Student Life Skills] class and you never come? So attendance is going to be a very high percentage of the grade. So

> students say, well I work and I can fax it to you, can I e-mail it to you, whatever, and my thing is that you have to put forth the effort to come the class" (D 2.2.12, 387-394).

So, D is saying that because students have not been academically successful due to attendance problems, it does not make sense to allow them to get out of the requirement to come the class, a requirement that is specifically designed to teach them a skill research shows is necessary for academic success. C believes, based on his own experiences, that PowerPoint presentations may in fact be distracting students from the content. Perhaps he's right. I have noticed that students are able to take adequate notes from a videotape of the professor making a standard lecture presentation, while they failed to be able to extrapolate relevant information from documentaries such as those of National Geographic.

University of Miami psychology professor, Adele Hayes, might concur; she believes that the high stimulation of television has adversely affected students' abilities to attend (pay attention) to lectures for an extended length of time (personal communication, 1999). A number of others voice opinions that attention to computer methodology focuses on the delivery system at the expense of content; the content that they very much believe students must gain.

N believes that computers put more pressure on students to learn an additional skill that is not directly associated with the skills and content of the course. Many participants point out that community college students are immigrants, at-risk students, second chance students, and minority students whose only access to post-secondary education is the community college. They argue that adding the extra burden of required computer use and access is a further handicap. There is a similar argument put forth in international development education, that computer technology is widening the gap between the haves and the have-nots. The participants believe this may be at work on a microcosmic level with our "developmental" students.

M sees the computers as "fun" and fun is not learning (M 2.2.7, 239). Interestingly, the same argument, "if it's fun it can't be learning," was levied against game and play theories of learning; theories whose veracity and validity have long been accepted by early childhood educators. N sees the computer as a waste of time in that it takes time away from content learning.

> N I don't know if it's my personal bias but I see the same attitudes. Computers--we have to bow down to them they will solve a lot of our problems and therefore we need to use them in every classroom. OK you want to make the students literate in computers--good idea. They probably need it for when they're going to go to work. Well do that for the students but don't impose it upon every classroom. Whether it's good or bad it takes longer. It wastes time. It is wasting time only in the sense of wasting learning time, not wasting time. On the contrary computers will make you gain time in the process of using them but wasting time because if I have 50 minutes I need to make those 50 minutes as valuable as possible. I don't want to spend 25 of them getting them ready to push the buttons and making sure they're pushing every button. I don't have that time because my objective is not to teach them computers. If my objective is to teach them computers then 25 minutes to get them to get them ready to push the right button is fine (N 2.2.15, 508-520).

Through the lens of the participants' desires for high relational involvement with students' learning, their criticism of even the low-level CAI software, takes on a new color. Software is developed by other people. The control of content, sequence, type of problems, forms of answers, delay times, re-enforcers, detractors, and branching are all controlled, developed, and presented by another person, usually an unknown entity. "Teachers no longer 'teach'; instead, they are managers of relatively rigid delivery systems and immutable instructional content" (Callister and Dunne, 1992, p. 325). At best, the participants can review and choose which CAI software to prescribe for the students' use. This goes against the grain of the participants' centrality to the students' learning and concurs with Wiske et al. (1990, in Hannafin and Savenye, 1993). McMahon (1990) found that "teachers resent the computer because they see it as a competitor for students' attention" (in Hannafin and Savenye, 1993, p. 27). He rhetorically asks if teachers would similarly resist team teaching. Though I did not pose that precise question, one participant,

R, mentions team teaching and he says that he "loved it." On the other hand, only D mentions using any other educational media in teaching. She occasionally uses a movie. No one else mentions movies, TV, radio, slides, filmstrips, or photographs, and only two use an overhead projector. No one mentions employing guests or field trips. D does use service learning as a curricular supplement to her psychology classes.

Essentially, these participants see teaching as a human to human endeavor, in which they are a primary player. They work hard at perfecting their part in the interaction in firm belief that, thus, they positively impact student learning. They do not easily entertain intrusions on that essential relationship and view computers as possibly dehumanizing it. In describing their relationship with students, many participants use the word, "professional," thus linking how they relate to their students through their work. They expand their ideas of professionalism by explaining that they maintain a caring distance from students. They are ready to help students but wish to maintain a clear student-teacher relationship that is not completely equal; this is so even though a number encourage students to use their first names without titles. This sense of professionalism is significant in that it is coupled with strong dedication and commitment to their work and links to their roles in the institution and society.

Faculty and faculty.

Festinger's notions that individuals' attitudes and behaviors tend to be internally consistent with what they believe, and that inconsistency causes dissonance and motivation for change (Festinger, as cited in Evans, 1967). Burkhardt (1994), reviewing literature which looks at the influences co-workers have on each other, finds that people are drawn to associate in groups with similar demographics and attitudes and that their attitudes are influenced by the groups. It is significant that these cliques are at once inclusive and exclusive. Those within the group tend to be homogeneous; divergent influences and other opinions are less available for consideration of possible change. The people most divergent

from the cliques and the advantage of their different viewpoints, ideas, and attitudes are lost to the group and its members. Burkhardt does not explore this aspect which emerges from my data.

While asking JA for help in identifying participants who would fit the study's profile, she said that she did not know who would fit, as she does not associate with faculty who do not use computers at or near her level. She says, "Almost everybody I have contact with are at the other end of the spectrum. The others--I wouldn't know them because they have not approached me for anything. I was the departmental liaison for helping people set up the computers and the only people I know are the ones who have been in my workshops; those people who needed to learn" (JA 2.3 .10-11, 354-358). She often works very closely with one of the CTD trainers in technology.

I looked for similar responses from others and found that the participants do not associate much with high-end computer users. One exception to this was JC. She associates with two computer users; one is her sister, who also works at the college, and the other is her co-author. Neither has had any influence on JC's own use of computers. JC believes that the others use computers in teaching because "they just like them." M mentions some feelings of exclusion when she is around high-end users. She finds this off-putting. I asked M if other colleagues look differently at those who use computers and those who don't; she says:

> M Without specifically asking to get that information from a great number people I would say yes. I would imagine so.
> B I am asking you for perceptions, not for statistical data.
> M No. But I really don't asked that question; so, it has to be sort of a feeling sort of thing. Yet I think so. "Well we know that you don't use computers. We can still have conversation. We know that you don't; so, I don't expect you to use a certain things or agree with me. It doesn't mean that we can't talk about it but I know you don't..." Yes, I think that statement is made in the minds of people when we talk and certainly about me (M 2. 2.16, 536-545).

There is no mention of departmental discussion of computer use beyond the focus on the department's proprietary laboratories. The facts that non-adopting faculty do not

form groups with high-end computer users and innovators and there is no discussion of using computers in teaching in departments, the primary college sponsored forum for academic discussion, go a long way towards explaining why the participants testify to little sense of pressure to adopt computers into their teaching. While high-end users may be unaware of who is not using computers at all, the participants are very aware of those who are using them. In most cases, they had no difficulty naming at least one individual who is at the upper end of computer use. This knowledge also means that they know where to look if they wished to observe someone using computers in their field. So, while they complain that CTD does not have workshops in which colleagues from their specific content areas demonstrate effective use of computers in their field, the participants do not seek out and observe those that they easily identify as such colleagues. If awareness and accessibility clearly are not the issues then it is logical to assume that they do not sufficiently desire to commit the time to observe the other colleagues who are using computers. In this case the observability (Rogers, 1995) of the innovation has not facilitated adoption.

Faculty and college.

The participants do not feel pressure from the institution. From their perspective, the institution is supportive of computer use and they feel that, if they were to want to adopt computers into their teaching, the college would assist their efforts with training, software, and hardware. They do not feel that the institution is encouraging computer use in teaching. When I asked some of them how they would feel if the institution were to require computers in teaching, they did not welcome the idea. They indicated they would resist. A number stated that they believed that methods are the purview of the instructor and as computers are tools and fall within methods, they should be allowed to decide whether or not to adopt them. Though the literature does not support such an approach as effective, I asked the question because the institution has entertained such a notion. Apparently the

participants are unaware that the current contract proposal from the administration indicates that possibility (MDCC, administrative contract proposal, 1999). It is curious that the idea of imposed adoption of computers in teaching is the only time that the participants speak of resisting.

The reality is that the institution's efforts to encourage computer use in teaching, thus far, have been limited to a few areas: CAI purchases; PowerPoint (previously HyperCard) presentation software; computer basics, including basic Internet and Web page design; and distance education, which as yet has not been computer-based. Distance Education has always been an enclave, offering courses outside of their respective departments. Levine (1980) says that such "enclaving is the process whereby the innovation assumes an isolated position within the organization" (p. 14). Alternative programs, which are examples of innovation, such as Open College, Life Laboratory, Bilingual Studies, I-Division, Independent Studies, Virtual College (now Distance Education) have all been enclaved and have functioned independent of the other departments that offer the same courses. The isolation of enclaving has protected and nurtured innovations so long as the programs have been profitable; on the other hand, the isolation has also contributed to the demise or deterioration of many of these innovative, alternative programs. In periods of contraction and lower profitability, the innovative programs have been the first to suffer. Their very segregation made them more vulnerable and easier targets for cutting. Many had been criticized by the traditional departments, which often felt the alternative programs took students away from them; so, when decisions for cutting had to be made, there was little or no support from the other areas of the college to keep the alternative programs. The innovative programs have not been valued as highly as traditional programs.

In traditional departments innovation is less encouraged and, thus, it has been less evident. This may be because of what they have seen occur with the alternative programs

or perhaps due to the internal resistance of the groups in the departments and their inability to reach consensus. I suspect that individual innovators have been tolerated and held out as tokens. More innovation and following the lead of innovators has not been greatly encouraged. Recently, I shared with my department administrator my desire to use a "process syllabus" and team-teach with another colleague. As I tried to explain how students would participate with us in designing the course and telling her how the objectives would be met, she interrupted me with, "but they will have a written syllabus won't they!" Much lip service is paid to the concepts of students first, collaborative teaching, and student centered learning but there is still a lack of comprehension and support for such curricular innovation. It does not appear, though, that the participants perceive such restrictions.

Faculty and society.

The question is, as in the interview guide: "What does it mean for you to be a teacher -- both personally and in terms of society?" In response, the participants are more focused on what it means to them and to their students. Issues of how society at large views the profession, how the profession fits into the society, what importance the role is to society and other such sociological topics were not stimulated by either the initial question nor were later attempts to reintroduce the topic successful. C says in response to the question: "what strikes me is that I see our students are not well socialized and I see myself as a socializing agent" (C 1.1.9, 291-292). It seems that it is far more relevant to the participants how students view their role and respond to them as teachers. For the participants, the picture of their role and society is one that is seen through the student-teacher, teaching-learning relationships. It is personal and very human.

> D Now I'll be honest with you while I think technology is wonderful, you know, the counselor in me I think the personal touch will always be. That's just me that's the counselor in me (D 2.2.11, 348-350).

While Hannafin and Savenye are speaking about K-12 teachers and the overall society, what they say is applicable to the participants. "The educational system and behavior of teachers within it can be seen merely as a reflection of society's collective expectations. In other words, the administrators and teachers have norms and expectations that guide their decisions and actions" (Hannafin and Savenye, 1993, p. 29). The institution is subordinate to society's norms; so while the participants at higher education levels are not susceptible to parental pressures to conform, they are still constrained by the norms as manifested in their students' expectations of teachers' behaviors and the institution's expectations of what will occur in the classroom. These expectations and norms restrict teachers' attitudes about innovation. "The risks associated with overriding the constituency are too great. Therefore, the teacher would tend not to ever stray far from the norm" (Hannafin and Savenye, 1993, p. 29). Many curriculum innovators, myself included, have found it necessary to explain to students innovative methods that differ from their expectations of objectivist lectures and practice. Not only do parents, who come from a traditional education, want their children to have the old, familiar instruction but also when parents are adult students, they expect their professors to be traditional.

Chapter VI

Conclusions

> Genuine freedom, in short, is intellectual; it rests in the trained power of thought, in ability to "turn things over," to look at matters deliberately, to judge whether the amount and kind of evidence requisite for decision is at hand, and if not, to tell where and how to seek such evidence. If a man's actions are not guided by thoughtful conclusions, then they are guided by inconsiderate impulse, unbalanced appetite, caprice, or the circumstances of the moment. To cultivate unhindered, the unreflective external activity is to foster enslavement, for it leaves the person at the mercy of appetite, sense, and circumstance (Dewey 1933 p. 90).

The intent of the study has been to look at specific examples of a larger phenomenon -- resistance to change. The specific examples have been the community college faculty who have chosen not to use computers in their teaching. Computers in society and educational computing are changes that even the participants in the study view as change that is inevitable. The 27 hours of interviews which yielded about 500 pages of transcription and the analysis in the previous section are not the end of the analytical process. Wolcott (1994) says:

> As fad, the excesses of that new reflexivity may have passed, but the way has been cleared for researchers to express more of their own voice in their accounts. If the art and act of interpretation have not been correspondingly enhanced, at least the personal reflections of the researcher as interpreter have come not only to be allowed but expected.
>
> But these are lofty thoughts. The interpretive dimensions of the essays before you are of modest scope, although in each example they transcend the data that prompted them, and they are definitely reflexive. They represent my efforts to extend beyond the boundaries of a particular case to find broader application or meaning. They are my answers, tentative but not timid, to the nagging question faced by everyone who conducts research in the qualitative/descriptive or, for that matter, any other mode: "So what?" (p. 256).

I could not have said it better myself. It is precisely the "So what?" that this final section looks at. Inherent in the so what, are several sub-questions pertaining to this study. Much has been offered from research and theories about why teachers do not use computers in instruction. My analysis has made use of both the data and the prior work. What results can be concluded from these things? What seem to be "real issues" and "not

real issues" involved in the participants' decisions? What might be said about them that might apply to others? What, if anything, might be learned about research into the questions? What, if anything, might be said about the larger question of resistance based on the study?

The research has had some gaping holes regarding method and focus. The focus has been pro-innovation and blaming the individual (Caplan and Nelson, 1973; Herling, 1994; Rogers, 1995; Watson, 1997; and others). The research has been typically quantitative and quasi-quantitative surveys. No one has just asked non-adopters why they do not adopt, which further distances them from our comprehension and exacerbates the individual blame syndrome. Lest we underestimate the blame-the-individual tendency, I quote from Caplan and Nelson:

> Certain groups within society become continually stigmatizing as problem groups (e.g., migratory workers, mental patients, blacks, the poor) because they are visible and accessible, but, most especially, because they are vulnerable to the social scientist for research purposes. In this sense the criteria by which social scientists select "problem" groups for study are not unlike the criteria by which the wider culture selects in certain groups as scapegoats. Indeed, the former process often follows the lead of the latter. Nonachieving lower income children are more identifiable and accessible as a research population than are greedy "entrepreneurially motivated" slum landlords. Thus, there is much person-centered research data to justify initiating a program such as Head Start (all the data suggesting, essentially, that it is the child who fails, rather than the school and the educational system). But, by contrast, there is a lack of data on landlords, bankers, and city officials to permit building code violations that would justify using them as targets for person-change treatment efforts (1973, p. 207).

In many senses non-adopting teachers are one of the stigmatized groups. Regardless of how much Rogers claims "laggards" has no pejorative intent and that both innovators and laggards are "deviants," I am not swayed. Laggard is a heavily laden word that to my ears screams of bias, prejudice, and disrespect. Compared to the term "innovators" there is hardly any manner in which I can say that they are equal nor could I say that they are neutral. Both are loaded and yet are inclined in different directions. "Innovators," in current North American society, is filled with as much unspoken praise as

"laggards" is filled with silent denigration. If nothing else, I hope this study will move us away from using the term "laggards." At least "non-adopter" is more neutral but I am not satisfied with it either. Later, I will suggest a word which comes from Klein (1967).

Ageism

You can't teach an old mouse new clicks.

In most research, demographics are considered in order to determine how they impact the research. While the demographic considerations were in the selection process, they were not relevant to the study beyond trying to make the participants somewhat reflective of the institution as a whole. However, I would like to insert just a few words here about the existing research and some demographic issues. I did not come across studies that considered race or ethnicity in the question of resistance to computers. Gender was considered in Bolton (1997) and in Sacks, Bellismo, and Mergendoller (1993) and was not very significant.

Age comes up often with mixed results. For example, Rogers (1962, 1983) says age is significant while Rusch (1988) says it is not. I tend to side with Rusch, who not only says that we can teach an old mouse new clicks but that there appears to be unwarranted age discrimination, bias, and stereotyping. She gives examples of the more mature teachers' receptivity and contributions to change. We should be vigilant, as researchers, to oppose ageism, an under-discussed bigotry. As I creep past the other side of 50, I am perhaps more sensitive to this particular and peculiarly North American bias.

One of the most pervasive technologies of the century is threatening to turn on us at the very turn into the next millennium. No one has not heard of the Y2K problem, so it makes good sense to inspect decisions about computer use in our education system. We have been caught up in the newness and the fascination. "The technologies are fascinating because, in their complex equivocality, they force us to grapple with a key issue in technology -- namely, how to apply perceptual perspectives to a material world" (Weick,

1990, p 39). Reflection on the technology and the implementation has been elemental in this study. Weick offers us the phrase, "technology as equivoque. An equivoque is something that admits of several possible or plausible interpretations and therefore can be esoteric, subject to misunderstandings, uncertain, complex, and recondite" (Weick, 1990, p 2). Certainly we can use any other definition of technology that fits our needs (see Table 5). One thing is certain; computers in teaching are technology as equivoque. There is much still in fluctuation, in change, uncertain, complex, misunderstood, and maybe recondite.

The Issues

The study has been conducted in a situation, a context, a life space that is very conducive to adoption of computers. The environment is rich and financial costs for participants are nonexistent. The technology is available and well supported financially, technically, with hardware, software, and training. There are adopters, in all phases of adoption, who may pass on information about the new technology. The participants have progressed through the process of awareness, interest, trial, evaluation, and rejection. They are cosmopolites in some ways and localites in others. Society's support is shaky but it is irrelevant to the participants. So what are the participants telling us about the issues, complex and recondite, involved in their decisions to reject computers from their methods? They indicate that some issues are more "real" than others are. (Real issues are those influences affecting their decisions). Table 6 shows how the "real" and "not real" issues fall based on the analysis.

Table 5

Technology Definitions

Definitions	Source
1. "We define technology as the physical combined with the intellectual or knowledge processes by which materials and some form are transformed into outputs and used by another organization or subsystem within the same organization."	Hulin and Roznowski, 1985, p. 47, cited in Weick, 1990.
2. Technology is "a family of methods for associating and channeling other entities and forces, both human and nonhuman. It is a method, one method, for the conduct of heterogeneous engineering, for the construction of a relatively stable system of related bits and pieces with the margin properties in a hostile or in different environment."	Law, 1987, p. 115, cited in Weick, 1990.
3. " Technology refers to a body of knowledge about the means by which we work on the world, are arts and are methods. Essentially, it is knowledge about the cause and effect relations of our actions... Technology is knowledge that can be studied, codified, and talk to others."	Berniker, 1987, p. 10, cited in Weick, 1990.
4. "Technology is a system of components involved in acting on and/or changing an object from one state to another."	Goodman, Griffith, and Fenner 1990, p. 48.
5. "A technology is a design for instrumental action that reduces the uncertainty and the cause-effect relationships involved in achieving a desired outcome. A technology usually has two components: (1) a hardware aspect, consisting of the tool that embodies the technology as a material or physical object, and (2) a software aspect, consisting of the information base for the tool"	Rogers, 1995, p. 12.
6. Technology is any consciously developed method, that may or may not involve an instrument but always involves a process, for achieving a desired outcome.	Stocker, 1996, p. 1.

Table 6

Influences on the Decision

Real	Not Real
Complexity	Complexity
Negative experiences	Divisibility
Quality of software	Communicability
Traditional methods and control	Job satisfaction
Replacement value	Self-efficacy (competence)
Professional orientation	Observability
Human relationships	Pressure
Positive feelings	General receptivity to change
Relative advantage and usefulness	Belief in computer's value
Incongruence and values	Large philosophical concerns
Time, in and out of class	
Impact on students	

These real issues have real implications for the research question and have real meaning for the participants. They are the concrete underlying the influences on their decisions (outlined above in Table 6). The details that they give are mentioned with sufficient frequency to be convincing. Therefore, continuing from information in the above table and again drawing from the data, the participants' supporting meanings for the influential issues can also be summarized. This summary is in the Table 7. The discussion of the implications follows.

Table 7

Meanings of the Influences

Real Influences	Meanings
Complexity	not worth the time given all below
Substitute value	not significantly better than existing technologies at CAI level
Relative advantage	not perceived as useful at CAI level
Time	requires too much time compared to relative gain requires too much time from class time
Professional orientation	participants relate more to their students than to their colleagues for feedback about their methods; feedback feels good
Human relations	the relationship between the student and a teacher is paramount human interaction is important to teaching and learning
Role of teacher	involves human contact imparts knowledge
Incongruence of values	computer interferes with human relationships
Traditional methods	computer requires unwanted paradigm and behavior shift above CAI level loss of role, relationship to students, control, and centrality
Negative experiences	given the above, confirms lack of efficacy, always somewhat suspected poor software at CAI level, poor training experience

What appears central to the participants' decision to not use computers is the impact on their role, the relationship to knowledge, to their students. Several researchers have intimated the same (Collins, 1991; Hannafin and Savenye, 1993; Snider, 1992). The extent to which this appears to have some truth and validity is also strongly supported by my

interpretations of the data. While these prior researchers have had some insights in regard to this particular set of influences on the non-adoption process, all have fallen into the pro-innovation pit. They assume that traditional values and methods should be exchanged for more progressive ones, specifically computers in teaching. The teachers in my study view the relationship between their students and them as the most important consideration. Anything, anything at all, that threatens this relationship is met with resistance. When this very high value on the student teacher relationship is combined with legitimate doubts about the efficacy of the innovation and negative experiences with it, there is little room for change. But is this wrong?

Even students are questioning the necessity of computers in higher education. In a recent article in The Miami Herald, Nate Stulman, a sophomore at Swarthmore College, says,

> Students waste too much time on computers. What are they doing with their top-of-the-line PCs and high-speed T1 Internet connections? They're playing Tomb Raider instead of doing chemistry class, tweaking the configurations of the machines instead of writing the paper due tomorrow, collecting mostly useless information from the World Wide Web instead of doing a math problem set... Having a computer in the dorm is more of a distraction than a learning tool. Other than computer science or mathematics majors, few students need more than a word-processing program and access to e-mail in their rooms (1999, A 24).

When looking at my research question in light of the results of the research on educational computing, it is very important that we focus on the aspect of the human relationships. Though it is clear that the traditionalism of the participants' methods comes into play here, the traditional methodology is not a stand-alone vector of influence. These traditional methods are very much interwoven into the human relationships, the student-teacher relationship; in fact, the relationships and the participants' beliefs about them could serve as the paradigm for looking at all the other factors that appear to have influence on their decisions. These teachers are not refusing to change their methods. They are very much open to change within the framework they use. They are successful teachers; a

number have been recognized for their outstanding work. They are teachers who are very dedicated and who very much care about the success of their work. It should be equally difficult for us to dismiss them as laggards, unwilling to progress.

The relationship focus, the relationship value if you will, is one that has been cultivated for centuries in the education process. Socrates worked one on one, and we have named a long cherished method of instruction after him. Yet he was known to be suspicious of writing's negative impact on memory. "In Plato's *Phaedrus* Socrates predicts that writing things down 'will create forgetfulness in the learner's souls, because they will trust to the external written characters and not remember of themselves...They will appear to be omniscient and will generally know nothing' " (Snider, 1992, p. 317). We must not take lightly the old ways and turn against them simply because they are old. This "new is better" concept that the conspicuous consumption society accepts should be suspected for its market motives. Among other mistakes, it contributes to our ageist attitudes. No other place has planned obsolescence been more apparent and less criticized than in computer technology.

Not long ago I was attempting to promote the adoption of a reading text that I very much like and I encountered the criticism that it was outdated. An outdated reading text is hard for me to imagine but the better point is that such criticism was given as the beginning and the end of the consideration of the text. There are books with newer copyright dates and that was sufficient -- there was no consideration of its merits or even demerits on any other basis. Were we to apply this kind of thinking to course content, we would have to teach only Tupac and not Mozart, see Rocky and not Shakespeare in Love, read the latest best sellers and forget Marlow, Borges, Cervantes, Sartre, and even Socrates, and on and on. If we can so easily see that such content adulterations are ridiculous, then why not be more liberal in our acceptance of classical methods?

The participants in this study are not easily going to let go of their tried and true ways. It is not because they are too lazy to change but because they believe that what they are doing is the correct and right thing; they get feedback from students and others that supports their beliefs; they enjoy doing it that way. They have no convincing evidence to the contrary nor anything that so strongly appeals to them to change. Teaching for them is a very human, a very social activity. They love to be with students, enjoy their company, like helping and talking with them. They are helpers by nature, by calling, and by choice. Helping people learn is something that they particularly "love" to do. They have made life decisions based on these beliefs and values. They pride themselves on these values.

So what does this say for others? While it is up to the reader to ultimately decide, I would suggest that if someone wants to move these kinds of people into a computer classroom -- more thought is needed. Why would we put a Rembrandt on a Bauhaus wall? There is good teaching in all methodological camps and it is good teaching that counts. The qualities of good teaching as pedagogic concerns are not directly linked to computers and only to technology in its most rudimentary definition -- those techniques that get the job done. The list of qualities from the Miami-Dade Statement of Faculty Excellence (see appendix 2) does not mention technology in any form and most of us would be hard pressed to find fault with the excellence statement because of such absence.

I have held firm to my beliefs about research and acted well upon my values as expressed in other sections in this study. I am very much pleased that my choice of design, based on my values and the research question, and the implementation of the study have been such that the participants have not only been left intact and unharmed but that they actually enjoyed and, in some cases, benefited from the interview process. As we can now see it is commonsense that these participants would find talking about themselves as teachers pleasant and educative. But then, as Eisner says, "Seeing what appears obvious is not always easy" (1998 p. 71). It has never been my intent to use this study to promote the

use of computers. Evans (1967) found that his subjects suspected his motives to be pro-ITV, while he consistently maintained otherwise. So, I made every effort to remind participants in this study that there has been no intention to convert, no bias in favor of computers, in spite of the nature of the study and my background. I learned long ago, at Smith College Laboratory School, that some children and some teachers are compatible with open classroom environments and some students and some teachers are more comfortable in traditional settings and perform better with traditional methods. In the best of educational worlds students, curriculum, teachers, and methods would be matched according to the styles and preferences of each.

As it stands my assessment of the participants as traditional has no hidden agenda and, furthermore, I view resistance to computers as important. With technology as equivoque taken as a given and with the computer as the juggernaut innovation it is, some resistance is desirable. Let's not, as the joke implies, be Pentium wise and pen and paper foolish. Klein (1967) coins this term: defender role. Here is the first pro-resistor in the change literature. When we have cured the jaundice in our eye, we will see others who have been standing up for the resistors all along. We might read Giroux (1983) or Freire (1973) and there are others. The defender role, an elegant term for resistors, serves to slow the computer juggernaut, which in the history of societal diffusion must have no match. The mere idea of its efficacy as an innovation must be breaking the diffusion rate records; even the non-adopters in my study are convinced that the computer is a good thing and will eventually permeate education.

Computers have been taken for granted as essential to education. I will grant that the vocational use of computers is an undeniably necessary part of the larger curricula as the business world expects computer literacy but it is a far leap from the fact that secretaries must learn word processing rather than typing to accepting unequivocally that computers are substantially more effective than other technology in teaching other skills and content.

The defenders question the effectiveness of the new technology and, regardless of their motivations for doing so, their questions deserve adequate, reasonable, reasoned, preferably, previously researched responses. I think that it is more than significant that neither JA, the innovator, nor any of the other participants are aware of the lack of research which supports the effectiveness of computers in teaching. I find it more than curious that many "experts" are unaware of the research supporting computers in education.

I recently attended a panel discussion of these very issues. The discussion panel consisted of distinguished professors from several institutions of higher education and the Miami-Dade Public School board's lead educational technology person. The only two questions purported to be discussed were: Do computers improve learning? Do computers in the classroom enhance teaching? The answers were not forthcoming and a moderator was leading the panel away from the questions. As I had taken time away from my research to hear precise answers to those exact questions, I ventured to pose the questions to the panel again. I asked them, in the context of the research establishment where we were (Florida International University), to kindly cite hard data, real research, surveys and studies that, with reasonable certainty, could demonstrate a causal connection between computers and improved learning and enhanced teaching. None of the eight could offer more than anecdotal evidence, their feelings, their beliefs that computers are effective (Basiratman, 1999).

Lockard, Abrams, and Many (1997) state that the findings from their overview of research on CAI are inconclusive. "Research findings suggest that outcomes of CAI depend on many factors and have not been equal at all levels or in all fields, as was once widely hoped" (p. 213). They admonished practitioners considering adoption of CAI thusly, "the best advice available to those who wish to use CAI in their classrooms is to be cautious about expectations" (p. 214). With this knowledge or rather lack of knowledge about computers' effectiveness in education, we could reasonably argue that the resistors,

the non-adopters, the defenders, the laggards are those who should be followed and not the change agents, innovators, computer salespersons, and corporations. At a minimum, it becomes clear that the participants have made rather reasonable, responsible choices in regards to the adoption of a computer.

I believe my investigation has shed light on the research question: Why do some faculty choose not to use computers in their teaching? The answers are not the glib ones that say they are afraid, lazy, unwilling to change. They are not laggards nor neo-Luddites who are stubbornly refusing to move with the times. They are only in small part the reasons gleaned from surveys and suggested in the literature. The main reasons that these participants have made their negative choices regarding computers in teaching are consistent with their values and beliefs. The reasons that they have chosen not to use computers are sound. The reasons are that the computer conflicts with their values in regard to their teaching and crashes hard against their beliefs in regard to the nature of knowledge, the nature of learning, and the nature of the relationship that they wish to maintain with students. Computers, inarguably, require significant changes in these values, beliefs, and consequent behaviors. These are changes that the participants are not willing to make without overwhelming evidence that they are worth the sacrifice. For the participants, this worth is only definable in-so-much-as it positively improves learning. For even the experts, who honestly look at the existing research, the evidence is not there. Unlike the innovator, the high end computer user, these participants are not willing to adopt the computer on faith.

Caveat and Recommendations

The final caveat to qualitative research is always that the data are subject to other interpretations. To demonstrate the subjectivity of interpretations, I offer the following poem as a literate and literary summary:

The Blind Men and the Elephant
by John Godfrey Saxe

It was six men of Indostan
To learning much inclined,
Who went to see the Elephant
(Though all of them were blind),
That each by observation
Might satisfy his mind.
The First approached the Elephant,
And happened to fall
Against his broad and sturdy side,
At once began to bawl:
"God bless me! But the Elephant
Is very much like a wall!"
The Second, feeling of the tusk,
Cried, "Ho! What have we here
So very round and smooth and sharp?
To me 'tis mighty clear
This wonder of an Elephant
Is very like a spear!"
The Third, approached the animal,
And happening to take the
Squirming trunk within his hands,
Thus boldly up and spake:
"I see," quoth he, "the Elephant
Is very much like a snake!"
The Fourth, reached out an eager hand,
And felt about the knee.
"What most this wondrous beast is like
Is might plain," quoth he;
" 'Tis clear enough the Elephant
Is very like a tree!"
The Fifth who chanced to touch the ear,
Said: 'E'en the blindest man
Can tell what this resembles most;
Deny the fact who can,
This marvel of an Elephant
Is very much like a fan!"
The Sixth no sooner had begun
About the beast to grope,
Than, seizing on the swinging tail
That fell within his scope,
"I see," quoth he, " the Elephant
Is very much like a rope!"
And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!
Moral

So oft in theologic wars,
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
And prate about an Elephant
Not one of them has seen!

Many have been looking at the elephant and many have hold of a part of it. As Saxe says, none of us can hold the whole elephant. I hope that I have at least held onto a whisker throughout the study. With this caveat in mind, I would like to offer the following recommendations.

As Nelson and Kaplan (1975), and Rogers (1995) suggest, we should redirect our attention away from individual blame bias. Rather than blame and immediately assume the non-adopter is the problem, for whatever motives, more research should be directed at assessing the value of the innovation, the technology, the computer. The non-adopters raise legitimate issues regarding the efficacy of computers in the classroom and these questions have not been satisfactorily answered. (1) I recommend more research on the usefulness of computers in teaching. (2) We should not accept the value of the computers in the classroom without more proof. (3) Decisions for allocation of money should be assessed based on proven efficacy. Maybe lower teacher-student ratios, more teachers or more aides, better training and higher salaries for teachers would better serve education.

This study indicates that attitudes, values, and beliefs of the non-adopters influence their decisions to change their teaching and to not use computers. However, rather than focus on changing the attitudes of the non-adopters (4) I recommend that others change their attitudes towards the non-adopters and the computer. As a manifestation of this change in attitude I would like to see a change in language. (5) I recommend that all pejorative language be dropped from our descriptive vocabulary of the non-adopters and that rather than "laggards" we use "non-adopters" or "defenders." I suggest that rather than "traditional," which some view as pejorative, we use "classical," which has more positive connotations. Furthermore, I would caution all of us to be sensitive to inadvertent verbal

bashing of non-adopters as much as we should with any stigmatized group. (6) Research that begins with biases that are as obvious as models with "laggards" at one end of their range or other more subtle pro-innovation prejudice such as that which assumes that the most favorable outcome is adoption should be suspected and questioned rigorously.

(7) I recommend that attitudinal change include positive regard for age. We should be aware that one of the most often repeated beliefs is that age (chronological rather than institutional tenure) is the reason for non-adoption. Not only is it an unsubstantiated idea but also it promotes ageism both towards persons and the objects. (8) I would, thus, suggest that we not assume that because a thing is old it is not as useful, valuable, or desirable has a new thing. We seem to have fallen prey to the advertisements and the youth oriented culture that wants us to believe old is bad and new, young, the latest is good and necessary. Upgrades, version Ultimate.X, faster by the nanosecond are the basis for the new obsolescence. Here again, we should request more independently derived, unbiased evidence of value and worth.

The defenders in this study were very concerned about human relationships. Perhaps, we should reassess our relationship to the computer. As suggested by one of the participants, (9) I recommend more research that looks at the impact of technology on human relationships. (10) We should endeavor to see how computers impact student to student relationships. We should ask how it impacts their socialization, as well as their cognition. We should investigate how it impacts students' relationships with their teachers. (11) We might investigate the intriguing, albeit difficult, notions of how the computer affects our spirits and our spirituality. We could ask if technology is bringing us closer together or driving a larger wedge between us. We might ask if it is empowering us as persons or creating a sense of impotence.

Institutions, particularly educational institutions, should reassess their expectations of the defender in regard to adoption of technology. (12) We should not pressure teachers

to use a tool that no one has proven works better than the tools they are currently using. (13) Institutional training should focus more on the needs and wants of the entire faculty and not be driven by administrative and peer beliefs that technology is the only valuable training goal. Open forums or focus groups would be useful in discovering what faculty value and what they wish to have offered to help them improve instruction. Though the study was conducted with college teachers, I would still suggest that K-12 institutions might want to ask teachers if they would prefer an aide or 6 computers, programs, and technical support. We might be surprised at their answers.

(14) In all cases, I would not force computers on faculty who do not want them. I cannot envision the participants in this study changing their attitudes toward computer use. The few participants that think voice recognition programs might facilitate their adoption of the machine have no real understanding of the complexities, pitfalls, and amount of learning and training involved in voice recognition software. It is fraught with new types of errors that are sure to frustrate the already wary. (15) I do not recommend pressuring faculty to use computers. Not only does pressure build resistance, it is not necessary for this innovation, or these people. If the innovation is worth it to them they will be attracted and convinced on their own. (16) We should come to cherish diversity in teaching. We should look to the "old masters" for insights into human relationships in the classrooms and plumb their wisdom for worthwhile and successful teaching methods.

(17) We need to ask ourselves what the hidden curricula are in different methods of instruction. All curricula and methods have intentional and unintentional hidden messages for their learners. What are those messages that are inherent in a computer driven curriculum and methodology? Are these messages that we wish to transmit? Are the messages transmitted by computer curricula eliminating some learning that we would rather keep? The participants are very aware that some of the humanistic hidden curricula of their

classical methods are the value of positive human to human contact, the caring for the social and emotional domains, and the import of the whole person, not just the intellect.

Finally it is my hope that while assessing the non-adopters, the defenders, who participated in this study, you, the readers of this study, have reflected on your own attitudes, values, and beliefs, and have reassessed them. My last recommendation is a call for tolerance, acceptance, and understanding. We would all do well to remember that the six learned men of Indostan were each partly right and were all partly wrong.

> Evaluations should have clear closure points; they should not go on eternally. Evaluations are often hellish, occasionally heavenly, but they should not be eternal in duration (or seemingly eternal).
> From Halcolm's Evaluation Bible (Patton, 1982, p. 124).

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Appendices

Appendix 1

Table 8

A Composite Picture of Adopter Categories

Adopter Category	Salient Values	Personal Characteristics	Communications Behavior	Social Relationships
Innovators	"Venturesome"; willing to accept risks	Youngest age: highest social status; largest and most specialized operations; wealthy	Closest contact with scientific information sources; interaction with other innovators; relatively greatest use of impersonal sources	Some opinion leadership; very cosmopolite
Early adopters	"Respect"; regarded by many others in the social system as a role-model	High social status; large and specialized operations	Greatest contact with local change agents	Greatest opinion leadership of any category in most social systems; very localite
Early majority	"Deliberate"; willing to consider innovations only after peers have adopted	Above average social status; average-sized operation	Considerable contact with change agents and early adopters	Some opinion leadership
Late majority	"Skeptical"; overwhelming pressure from peers needed before adoption occurs	Below average social status; small operation; little specialization; small income	Secure ideas from peers who are mainly late majority or early majority; less use of mass media	little opinion leadership
Laggards	"Traditional"; oriented to the past	Little specialization; lowest social status; smallest operation; lowest income; oldest	Neighbors, friends, and relatives with similar values are main information source	very little opinion leadership; semi-isolates

Source: Rogers, 1962, p. 185

Appendix 2

Statement of Faculty Excellence at Miami-Dade Community College

Summary Statements

Motivation

Excellent faculty members at Miami-Dade Community College, whether classroom teachers, librarians, counselor, or serving in any other faculty capacity:

Are enthusiastic about their work.

Set challenging individual and collective performance goals for themselves.

Set challenging goals for students.

Are committed to education as a profession.

Project a positive attitude about students' ability to learn.

Display behavior consistent with professional ethics.

Interpersonal Skills

Excellent faculty members at Miami-Dade Community College, whether classroom teachers, librarians, counselor, or serving in any other faculty capacity:

Treat all individuals with respect.

Respect diverse talents.

Work collaboratively with colleagues.

Are available to students.

Listen attentively to what students say.

Are responsive to students' needs.

Are fair in their evaluations of students.

Present ideas clearly.

Create a climate that is conducive to learning.

Knowledge Base

Excellent faculty members at Miami-Dade Community College, whether classroom teachers, librarians, counselor, or serving in any other faculty capacity:

Are knowledgeable about their work areas and disciplines.

Are knowledgeable about how students learn.

Integrate current subject matter into their work.

Provide perspective that include a respect for diverse views.

Do their work in a well-prepared and well-organized manner.

Application of Knowledge Base

Excellent faculty members at Miami-Dade Community College, whether classroom teachers, librarians, counselor, or serving in any other faculty capacity:

Provide students with alternative ways of learning.

Stimulate intellectual curiosity.

Encourage independent thinking.

Encourage students to be analytical listeners.

Provide cooperative learning opportunities for students.

Give constructive feedback to students promptly.

Give consideration to feedback from students and others.

Provide clear and substantial evidence that students have learned.

Appendix 3

Informed Consent Form

I freely and voluntarily consent to be a participant in the research project entitled "The Choice not to use Computers" to be conducted in south Florida at a location agreed upon by me and the principal investigator, Bradford Stocker, during semesters between January 1999 and June 1999.

I understand that the process of the interview will involve three separate interviews of approximately 50 minutes (and not more than 90) over a period of not less than a week and not more than two weeks. I also understand that these interviews will be recorded on audiotape by the principal investigator and that these tapes will be kept confidential and in the sole possession of the principal investigator. I understand that I may request and receive a copy of the audiotape of my interviews.

I understand that there are no known or predicted risks or benefits involved in this research. I have been told that my responses will be kept strictly confidential. My participation will be anonymous and my name will not appear anywhere in the published results of the research.

I understand that the purpose of the research is to investigate the choice of community college faculty to not use computers in teaching. I understand that the investigator has no particular bias in favor or against the use of computers and will not attempt to influence my decisions or change my behavior in any way. The purpose of the research is to understand the context and process of decisions regarding computers.

I understand that I may end my participation and withdraw my consent at any time with no negative consequences. I have been given the right to ask questions concerning the procedures of the research and any questions have been answered to my satisfaction.

I understand that if I desire further information about this research I should contact Bradford Stocker at 305-661-5954 or Dr. Janice Sandiford at 305-348-3996.

I have read the above and I understand and agree with it.

_____	_____	_____
Participant's name	Participant's signature	Date

I have explained and defined in detail the research procedure in which the participant has agreed to participate, and I have offered the participant a copy of this informed consent form.

_____

Principal investigator's signature

Appendix 4

Interview Guide

Interview I

Explain the entire interview process before beginning.

The purpose of the first interview is to establish the context for the participant's experience. It also aims at the typical demographic information often solicited through surveys.

How would you describe yourself, demographically; e.g., age, gender, ethnicity?

How long is your tenure with the college?

What are your teaching areas?

If this were a job interview for a job in your area, what would you want me to know about you?

How did you come to choose teaching as a profession?
or
What experiences led you to teaching?

How did you come to choose your content area?

What are the significant learning experiences, books, media, travel and others, you most remember as influences on you as a teacher?

Who are the persons who have most influenced you to become a teacher?

Who are those who have most influenced your teaching?

Why **did** you want to become a teacher?
or
How did you see the role of a teacher before you began to teach?

Would you describe the events that brought you to your current position?

Interview II

The focus of interview II is to concentrate on the details of the participant's current experience in the research area and in the participant's context. **Restate my biases.**

Would you talk me through a typical class, from the time you prepare until you have closure for it?

Would you describe relationship to students you want to maintain?

Would you try to describe your thinking involved in the decision to not use computers in your teaching?

How would you assess the usefulness of computers in teaching in general?

What do you see as the institution's attitude towards computers and teaching?

Do you feel any pressure, one way or another, from colleagues in regards to computer use?

What if any experiences have you had with computers and teaching?

How accessible do you feel computers are to you if you were to choose to use them?

How aware are you of the support from the institution for computer use and how would you assess that support?

Interview III
The point of the third interview is to have the participant reflect on the interview process, the topics, and the meaning of the decisions taken in regard to the teaching process. It provides an opportunity for the participant to confirm or change what has been covered before.

What does it mean for you to be a teacher?
Look at this in both personal meaning and your place in society

Why do you continue to teach?
or
How do you see the role of a teacher now as compared to when you began?
Look at this in both personal meaning and your place in society.

How would you describe the process you have used to shape your teaching?

When you consider the use of computers, what are your thoughts, feelings and reactions?

What influences you to consider changes in your teaching?

How would you describe yourself as a teacher?

If you reflect on the focus of the past interviews, is there anything you would like to add or clarify?

Close with a request for feedback on the process, my style, the nature of the questions and anything else the participant may wish to share.

Appendix 5

Sample Page of Transcription

thought OK if we if I ever followed the Zionist route I would probably be a teacher. Maybe that would be the first time.

B First inkling of it

N yeah kind of but not yet a goal cause I said when I when

B do you have any recollection of when that became a goal for you? When you actually?

N no what I was thinking when I was going for my masters is when I had to make the decision and I wasn't sure yet

B as an undergraduate you were planning on...

N no as an undergraduate I was also going already for languages you know so I was kinda going but at the same time taking a lot of psychology...

B just for interest? you've taking languages before...

N no because I think it may have been already in my mind that that's one of the goals but instead I had this three way interest and I was thinking a lot about Psychology which later helped me as a teacher too the Psychology I was taking for interest and because it was a field I was also interested in. Probably when I was taking the language courses I already at the undergraduate I may have already kind of leaned toward that decision but it wasn't like a firm goal.

B and then but when you hit graduate school your master's program you then that was the point of time of entry

N oh yeah when I went to this after I went to this to this degree this what do you call it counseling what do they call it?

B Career counseling

N Career counseling and I spoke to that woman that woman I don't remember her name but something what she said kind of impressed me kind of pushed me in that direction

B Had you been thinking about teaching before she said that

N Well yeah because one of my choices you know in my mind was you know probably teach languages and you know I'd also like to be maybe a counselor you know I so I think I was impressed by her definite she had no she didn't say to me

VITA

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